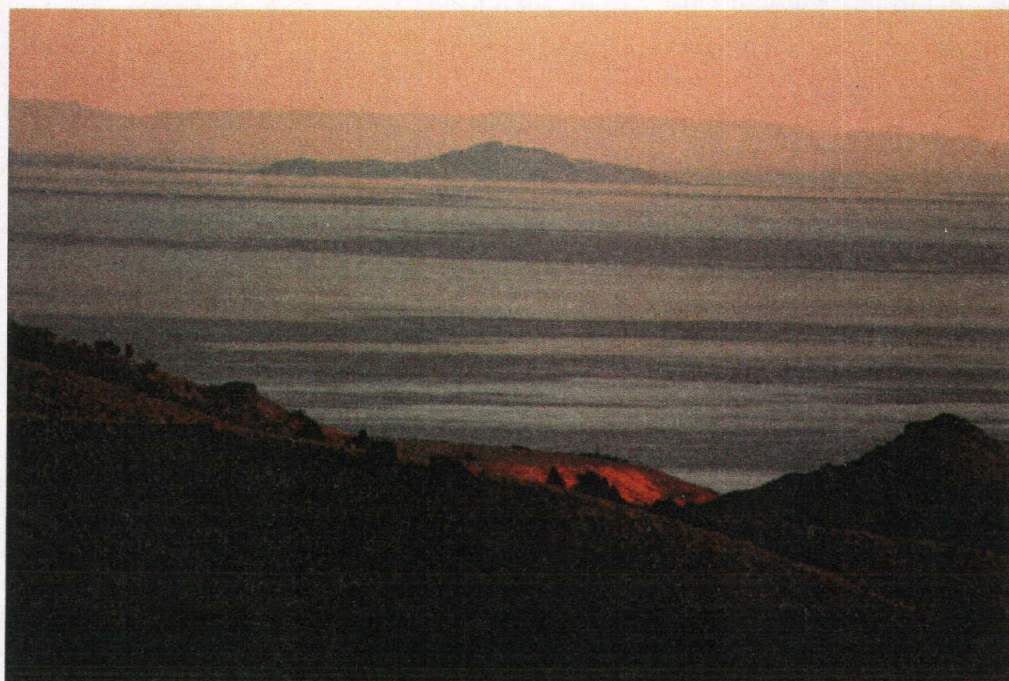


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cc: Leslie
Lynn

**Vegetation Baseline Survey
For the
Gold Hill Region**



December 2010

Prepared for:
North American Exploration

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DIV. OF GEOLOGY & MINING

Introduction

In September of 2010, a quantitative vegetation survey was conducted for eleven mine sites in the Clifton Mining District near Gold Hill, Toole County, Utah, for North American Exploration. Assessments on undisturbed vegetation are required by the Utah State Division of Oil, Gas and Mining (DOGM) within the immediate area of the mine site to gather quantitative vegetation data for baseline information. This information is generally used for post-mining revegetation targets. The mine operator must reclaim the area to 70% of background vegetation cover in order for the reclamation bond to be released. The site's physical and biological properties described here will help in reaching those revegetation targets.

Site Description

The properties are characterized by the typical basin and range geology of the area in that they lie within a north-south trending mountain range surrounded by desert basins and playas with no external drainage. Since the area lies within the rain shadow of the Sierra and Cascade ranges to the west, the area is arid receiving an average of only 10 inches of precipitation each year. Approximately half of the precipitation comes as snow between February and May, and the other half generally arrives as rain showers or occasional severe thunderstorms.

The mine sites are located in the foothills north of the Deep Creek Mountains in Toole County, Utah within Township and Ranges- T8S R18W and T8S R17 W, and within a 4.8 mile radius of Gold Hill. (See Figure 1 – Site Map)

The properties surveyed and their general locations and elevations are:

Cactus Mill- 40°10'05"N 113°50'11"W, Elevation 5318 feet

Frankie Pit- 40°08'26"N 113°49'42"W, Elevation 6086 feet

Lucy L. Pit- 40°08'22"N 113°49'18"W, Elevation 6043 feet

Rustler Pit- 40°07'57"N 113°49'57"W, Elevation 6129 feet

North Area- 40°07'49"N 113°49'26"W, Elevation 6250 feet

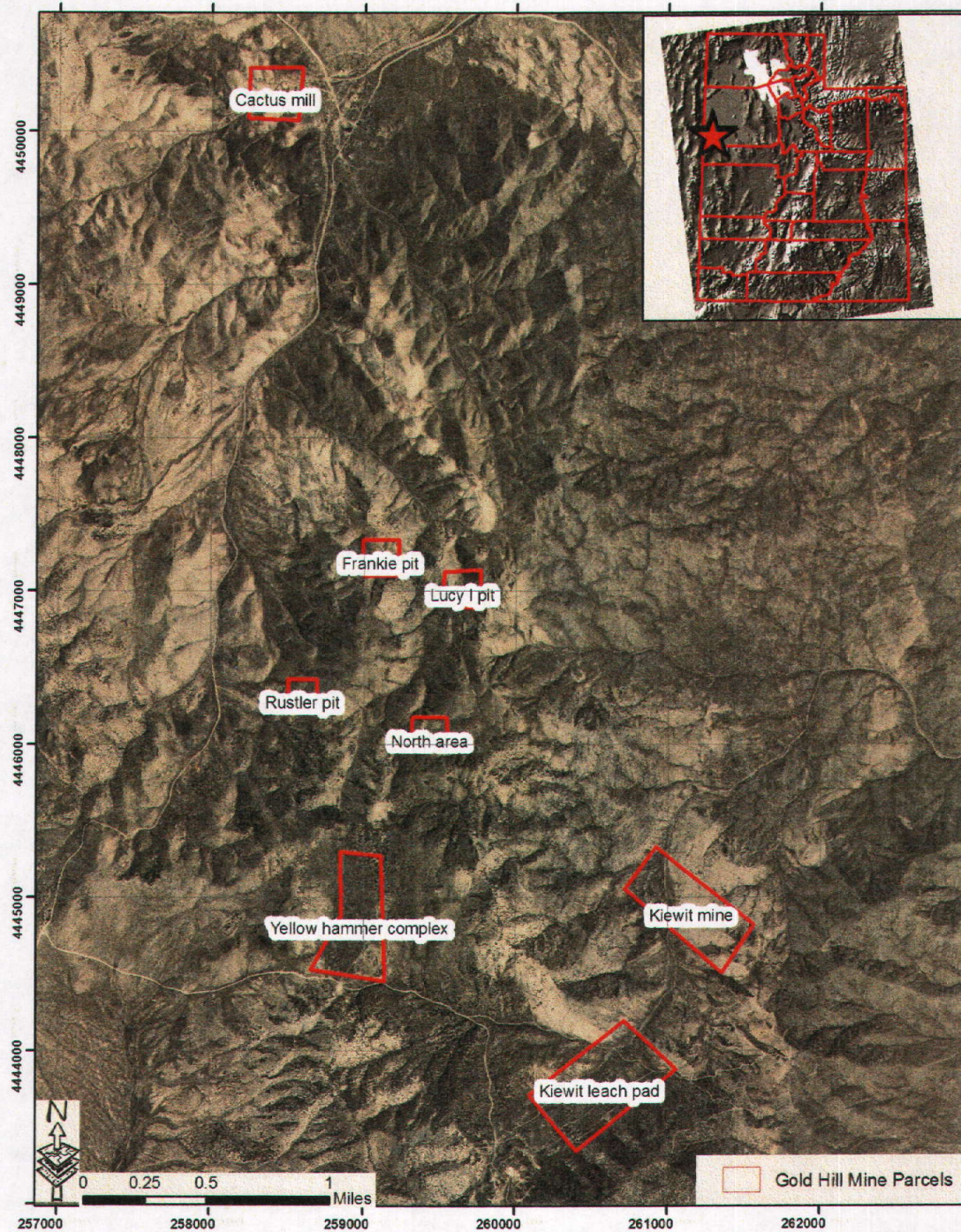
Yellow Hammer A, B, C and West Zones- clustered around 40°07'11"N 113°49'37"W,
Elevation 6293 feet

Kiewit Mine- 40°06'56"N 113°48'07"W, Elevation 5866 feet

Kiewit Leach Pad- 40°06'42"N 113°48'29"W, Elevation 5899 feet

The area is dominated by three principal vegetation types – black sagebrush (*Artemisia nova*), Wyoming sagebrush (*Artemisia tridentata* var. *wyomingensis*), and pinyon/juniper (*Pinus monophylla*/*Juniperus osteosperma*) woodlands. Detailed descriptions of these vegetation types are found in the Vegetation section of this report.

Figure 1. General location of the Gold Hill area (UTM NAD 83 CONUS)



Methods

A total of thirty-five – 100 foot point line transects were recorded within the three major vegetation types of the area, which are pinyon/juniper woodlands, Wyoming sagebrush shrublands, and black sagebrush shrublands. After a representative site was reached, a pin was spun to generate a random azimuth of the transect. At each transect, a pin was lowered at one foot intervals and all plant species or other ground cover (litter, rock, gravel, bare ground) the pin intercepted were recorded. If the pin intercepted more than one stratum of vegetation, these were noted as 'second' and 'third' hits. This information was then statistically analyzed as a percent cover and relative cover per species and per life form (Tables 1, 2 and 3). The '<1' in these tables indicates that a species was present in a 6 foot wide belt transect centered around the transect, but was not intercepted by the pin. Ten transects within the pinyon/juniper community were analyzed, 13 transects for the Wyoming sagebrush community were analyzed and 12 transects for the black sagebrush community.

Vegetation Communities

The flora of the area falls within the Bonneville Basin Section of the Great Basin Floristic Division (Intermountain Flora, Cronquist et. al.). The vegetation includes mosaics of singleleaf pinyon/Utah juniper, black sagebrush, and Wyoming big sagebrush community types with minor areas of rubber rabbitbrush (*Chrysothamnus nauseosus*), Basin big sagebrush (*Artemisia tridentata* var *tridentata*) and greasewood (*Sarcobatus vermiculatus*) dominated zones within the three major community types. Sagebrush (*Artemisia* spp) is dominant over much of the cold desert shrub lands of the Great Basin and is the most common community type within the study area (See site maps in Appendix A)

Black Sagebrush community: Black sagebrush covers over 40% of the acreage mapped. Black sage is generally found on shallow soils in valleys and on exposed mountain slopes. Total vegetation cover in this community averaged 35.9% +/- 7.7%. Ground cover was predominantly gravel or bare ground (22.8% and 23.4% respectively), rock was 13.1% and litter was only 7.8%. (See Table 1).

Black sagebrush was the clear dominant in this community type and accounted for almost half (44%) of the vegetation cover. Other significant shrubs in this vegetation type included Wyoming big sagebrush (3.9% relative cover), viscid rabbitbrush (*Chrysothamnus viscidiflorus*) (5.3% relative cover), littleleaf horsebrush (*Tetradymia glabrata*) (5.8% relative cover) and hopsage (*Grayia spinosa*) with 3.7% relative cover (See Figures 1 and 2).

All grass species combined was 18.8% of the total vegetation cover. Major cool season perennial grass components included Sandberg's bluegrass (*Poa secunda*) (9.5% relative cover), Indian Ricegrass (*Stipa hymenoides*) at 4.6% relative cover and bottlebrush squirreltail (*Elymus elymoides*) at 2.8% relative cover. All life classes of forbs (perennials, annuals, biennials) contributed only 1.6% of the vegetation cover. The paucity of grasses and forbs may be due to a combination of physical constraints (precipitation, poor soils, etc) and livestock grazing history. Livestock grazing can selectively remove and/or hinder grass and forb growth and regeneration. Soils supporting black sagebrush in this area are typically shallow and xeric, thus have a lower water holding capacity than adjacent sites that tend to be dominated by Wyoming big sagebrush or Basin big sagebrush. In addition, the soils in this community type have more surface rock and gravel (35.9% compared with 17.6% for Wyoming big sagebrush). Black sagebrush is sometimes found in more deep and moist soils and may co-

dominate with larger sagebrush subspecies. As such, black sagebrush is often found within Wyoming big sagebrush and pinyon/juniper communities in the study area.
(See soil and vegetation maps in Appendix A)



Figure 2. View from ridge at Lucy I Pit looking north west. Black sagebrush communities on near and far slopes, pinyon/juniper communities at mid slopes and ridges in distance



Figure 3. View looking south east at Rustler Pit. Black sagebrush community in the foreground with hopsage and green ephedra.

Gold Hill Baseline Vegetation Assessment

Table 1. Black sagebrush community type

Table 1: Black sagebrush community type									
	Black sagebrush Gold Hill n=12								
	Scientific Name	Common Name	Avg	St Dev	St Error	Low	High	Rel Cover	Frequency
Total Vegetation Cover			35.9	7.7	2.2	28.0	55.0		
Litter			7.8	3.6	1.1	3.0	15.0		
Rock			13.1	6.5	2.2	5.0	25.0		
Gravel			22.8	8.7	2.6	7.0	35.0		
Total Ground Cover			77.0	9.1	2.6	57.0	89.0		
Bare Soil			23.4	9.5	2.7	11.0	43.0		
Cool season perennial grasses									
	<i>Elymus elymoides</i>	Bottlebrush Squirreltail	1.0	1.5	0.4	0.0	4.0	2.8	58.3
	<i>Elymus spicatus</i>	Bluebunch Wheatgrass	0.3	0.6	0.2	0.0	2.0	0.7	33.3
	Other cool season perennial grasses		0.3	0.7	0.2	0.0	2.0	0.9	33.3
	<i>Poa secunda</i>	Sandberg Bluegrass	3.4	3.6	1.0	0.0	12.0	9.5	75.0
	<i>Stipa hymenoides</i>	Indian Ricegrass	1.7	2.4	0.7	0.0	10.0	4.6	75.0
	<i>Stipa comata</i>	Needle-and-thread Grass	0.1	0.3	0.1	0.0	1.0	0.2	33.3
		Sub-total	6.7	5.3	1.5	1.0	12.0	18.8	
Warm season perennial grasses									
	<i>Hilaria jamesii</i>	Galleta	0.4	0.9	0.3	0.0	3.0	1.2	25.0
		Sub-total	0.4	0.9	0.3	0.0	3.0	1.2	
Annual grasses									
	<i>Bromus tectorum</i>	Cheatgrass	0.6	1.0	0.3	0.0	5.0	1.6	66.7
		Sub-total	0.6	1.0	0.3	0.0	5.0	1.6	
Perennial forbs									
	<i>Astragalus beckwithii</i>	Beckwith's milkvetch	0.1	0.3	0.1	0.0	1.0	0.2	16.7
	<i>Astragalus spp</i>	Milkvetch	0.1	0.3	0.1	0.0	1.0	0.2	8.3
	<i>Astragalus utahensis</i>	Utah lady finger	<1	<1	<1	<1	<1	<1	8.3
	<i>Boechera sp</i>	Rockcress	<1	<1	<1	<1	<1	<1	25.0
	<i>Castilleja sp</i>	Paintbrush	<1	<1	<1	<1	<1	<1	8.3
	<i>Caulanthus crassicaulis</i>	Spindlestem	<1	<1	<1	<1	<1	<1	16.7
	<i>Erigeron spp</i>	Fleabane	<1	<1	<1	<1	<1	<1	25.0
	<i>Eriogonum sp</i>	Eriogonum sp	<1	<1	<1	<1	<1	<1	16.7
	Liliaceae	Lily	<1	<1	<1	<1	<1	<1	16.7
	<i>Penstemon sp</i>	Penstemon	<1	<1	<1	<1	<1	<1	8.3
	<i>Phlox hoodii</i>	Hoods Phlox	0.3	0.7	0.2	0.0	2.0	0.7	50.0
	<i>Phlox longifolia</i>	Long leaved phlox	<1	<1	<1	<1	<1	<1	16.7
	<i>Stanleya pinnata</i>	Prince's plume	<1	<1	<1	<1	<1	<1	16.7
	<i>Stephanomeria pauciflora</i>	Wire Lettuce	<1	<1	<1	<1	<1	<1	8.3
	Unknown Composite		<1	<1	<1	<1	<1	<1	8.3
	Unknown Perennial Forb		0.1	0.3	0.1	0.0	1.0	0.2	16.7
		Sub-total	0.6	0.9	0.3	0.0	2.0	1.6	
Introduced Perennial Forbs									
	<i>Carduus nutans</i>	Musk thistle	<1	<1	<1	<1	<1	<1	8.3
	<i>Malcolmia africana</i>	African mustard	0.1	0.3	0.1	0.0	1.0	0.2	8.3
		Sub-total	0.1	0.3	0.1	0.0	1.0	0.2	

Gold Hill Baseline Vegetation Assessment

Table 1. Cont

	Scientific Name	Common Name	Avg	St Dev	St Error	Low	High	Rel Cover	Frequenc
Annual and biennial forbs									
	<i>Atriplex spp</i>	Saltbush	0.1	0.3	0.1	0.0	1.0	0.2	8.3
	<i>Halogeton glomeratus</i>	Halogeton	0.3	0.6	0.2	0.0	2.0	0.6	16.7
	<i>Phacelia crenulata</i>	Crenulate phacelia	<1	<1	<1	<1	<1	<1	8.3
	<i>Sisymbrium altissimum</i>	Tumbling Hedge Mustard	<1	<1	<1	<1	<1	<1	16.7
	<i>Unknown chenopod</i>	Chenopod	0.3	0.5	0.1	0.0	1.0	0.6	25.0
		Sub-total	0.6	0.8	0.2	0.0	2.0	1.6	
Sub-shrubs									
	<i>Gutierrezia sarothrae</i>	Broom Snakew eed	<1	<1	<1	<1	<1	<1	8.3
		Sub-total	<1	<1	<1	<1	<1	<1	
Shrubs									
	<i>Artemisia nova</i>	Black sagebrush	15.8	6.8	1.9	4.0	25.0	43.9	100.0
	<i>Artemisia tridentata var wyomingensis</i>	Wyoming big sagebrush	1.4	3.0	0.9	0.0	10.0	3.9	25.0
	<i>Atriplex confertifolia</i>	Shadscale	1.1	1.1	0.3	0.0	3.0	3.0	66.7
	<i>Chrysothamnus nauseosus</i>	Rubber Rabbitbrush	<1	<1	<1	<1	<1	<1	8.3
	<i>Chrysothamnus viscidiflorus</i>	Rabbitbrush	1.9	2.5	0.7	0.0	9.0	5.3	91.7
	<i>Ephedra viridis</i>	Green Mormon tea	0.7	1.4	0.4	0.0	5.0	1.9	58.3
	<i>Grayia spinosa</i>	Spiny hopsage	1.3	2.4	0.7	0.0	8.0	3.7	41.7
	<i>Gutierrezia microcephala</i>	Thread snakew eed	0.3	1.2	0.3	0.0	4.0	0.9	8.3
	<i>Haplopappus nanus</i>	Goldenw eed	0.7	2.3	0.7	0.0	8.0	1.9	8.3
	<i>Tetradymia glabrata</i>	Littleleaf horsebrush	2.1	4.2	1.2	0.0	13.0	5.8	25.0
	<i>Tetradymia nuttallii</i>	Nuttall's horsebrush	1.3	4.6	1.3	0.0	16.0	3.7	33.3
		Sub-total	26.6	5.6	1.6	0.0	16.0	74.0	
Cacti and succulents									
	<i>Opuntia polyacantha</i>	Pains Prickly Pear	<1	<1	<1	<1	<1	<1	25.0
		Sub-total	<1	<1	<1	<1	<1	<1	
Trees									
	<i>Juniperus osteosperma</i>	Utah juniper	0.3	0.9	0.3	0.0	4.0	0.7	16.7
	<i>Pinus monophylla</i>	Single leaf pinyon	0.1	0.3	0.1	0.0	1.0	0.2	25.0
		Sub-total	0.3	0.9	0.3	0.0	4.0	0.9	
Average # of second hits: 7									

Wyoming Big Sagebrush community: Wyoming big sagebrush covers about 31% of the total acreage of the mine sites. Wyoming big sagebrush generally dominates on the deeper soils on the sites as compared to black sagebrush. These soils are typically found on shallower slopes near and within valley bottoms. Total vegetation cover in this community type averaged 52.6 +/- 8.1%. Litter accounted for 15% of the total cover, while rock was 5.0%, gravel was 12.6%, and bare soil accounted for 23%. (See Table 2)

Wyoming big sagebrush was clearly the dominant shrub in the area and comprised 38.7% of the total vegetation cover. Hopsage was the next most prevalent shrub with 7.2% relative cover, and black sagebrush at 3.1% relative cover. Other important shrubs were viscid rabbitbrush (5.6% relative cover), and greasewood at 3.8% relative cover. Greasewood was sometimes a co-dominant or dominant within a few stands of Wyoming sagebrush (transects CM3 and CM4 at Cactus Mill), but was rarely present on other sites (See Figures 3 and 4).

Basin Big Sagebrush is also present in this and other communities along the edge of arroyos and occasionally on alluvial fans where deeper soils were found. It represents a minor component of the vegetation across the mine sites and is only co-dominant in very small narrow areas. Likewise, rubber rabbitbrush (*Chrysothamnus nauseosus*) is found only in narrow bands along lower elevation arroyos particularly at Kiewit Leach, Kiewit Mine and Cactus Mill. These populations fall within Wyoming big sagebrush communities.

All grass species combined contributed 24.8% to the vegetation cover. Important cool season perennial grasses included Sandberg's bluegrass (8.6% relative cover), bottlebrush squirreltail (5.8% relative cover), bluebunch wheatgrass (*Elymus spicatus*) (3.5% relative cover, and Indian Ricegrass (3.4% relative cover). The invasive adventive annual- cheatgrass (*Bromus tectorum*) (4.7% relative cover) is a more common component here than in the other two main community types. It is widespread in the area and underscores the importance of careful and rapid re-vegetation of disturbed areas to prevent further spread. Other invasive adventive species of concern at the site include: African mustard (*Malcolmia africana*) musk thistle (*Carduus nutans*) and halogeton (*Halogeton glomeratus*).

All life classes of forbs (perennials, annuals, biennials) contributed only 0.5% of the total cover (or 0.9% relative cover). The following species of forbs are present in all three main community types at the mine sites: Beckwith's milkvetch (*Astragalus beckwithii*), Arabis (*Boechera*) species, Castilleja species, Spindlestem (*Caulanthus crassicaulis*), Erigeron species and carpet phlox (*Phlox hoodii*).
(See soil and vegetation maps in Appendix A)



Figure 4. View looking west- Kiewit Mine. Black sagebrush communities are in the foreground, Wyoming big sagebrush on the benches and arroyo bottoms below.



Figure 5. Wyoming big sagebrush community on valley bench.

Gold Hill Baseline Vegetation Assessment

Table 2. Wyoming big sagebrush community

Wyoming Sagebrush Gold Hill	n=12								
	Scientific Name	Common Name	Avg	St Dev	St Error	Low	High	Rel Cover	Frequen
Total Vegetation Cover			52.6	8.1	2.3	34.0	62.0		
Litter			15.2	5.2	1.5	5.0	24.0		
Rock			5.0	3.0	1.7	2.0	8.0		
Gravel			12.6	8.0	3.0	3.0	23.0		
Bare Soil			23.0	5.9	1.7	14.0	32.0		
Total Ground Cover			77.4	6.4	1.8	68.0	86.0		
Cool season perennial grasses									
	<i>Elymus cinereus</i>	Great Basin Wildrye	1.0	1.9	0.6	0.0	6.0	1.7	41.7
	<i>Elymus elymoides</i>	Bottlebrush Squirreltail	3.1	3.2	1.0	0.0	11.0	5.8	83.3
	<i>Elymus spicatus</i>	Bluebunch Wheatgrass	1.8	3.9	1.1	0.0	14.0	3.5	58.3
	Other cool season perennial grasses		0.2	0.6	0.2	0.0	2.0	0.3	8.3
	<i>Poa fendleriana</i>	Muttongrass	<1	<1	<1	<1	<1	<1	8.3
	<i>Poa secunda</i>	Sandberg Bluegrass	4.6	4.4	1.3	0.0	15.0	8.6	83.3
	<i>Stipa comata</i>	Needle-and-thread Grass	0.8	1.9	0.5	0.0	6.0	1.4	33.3
	<i>Stipa hymenoides</i>	Indian Ricegrass	1.8	2.1	0.6	0.0	7.0	3.4	83.3
		Sub-total	13.2	11.4	3.3	0.0	17.0	24.8	
Warm season perennial grasses									
	<i>Hilaria jamesii</i>	Galleta	0.9	2.6	0.7	0.0	9.0	1.6	25.0
		Sub-total	0.9	2.6	0.7	0.0	9.0	1.6	
Annual grasses									
	<i>Bromus tectorum</i>	Cheatgrass	2.5	3.0	0.9	0.0	8.0	4.7	83.3
		Sub-total	2.5	3.0	0.9	0.0	8.0	4.7	
Perennial forbs									
	<i>Astragalus beckwithii</i>	Beckwith's milkvetch	<1	<1	<1	<1	<1	<1	25.0
	<i>Astragalus spp</i>	Milkvetch	<1	<1	<1	<1	<1	<1	8.3
	<i>Boechera sp</i>	Rockcress	<1	<1	<1	<1	<1	<1	25.0
	<i>Calochortus nuttallii</i>	Mariposa Lily	<1	<1	<1	<1	<1	<1	8.3
	<i>Castilleja sp</i>	Paintbrush	<1	<1	<1	<1	<1	<1	8.3
	<i>Caulanthus crassicaulis</i>	Spindlestem	0.1	0.3	0.1	0.0	1.0	0.2	16.7
	<i>Cryptantha flavoculata</i>	Cat's eye	0.1	0.3	0.1	0.0	1.0	0.2	8.3
	<i>Cryptantha spp</i>	Cat's Eye	0.0	0.2	0.0	0.0	1.0	0.2	12.0
	<i>Delphinium sp</i>	Larkspur	<1	<1	<1	<1	<1	<1	8.3
	<i>Erigeron spp</i>	Fleabane	<1	<1	<1	<1	<1	<1	8.3
	<i>Liliaceae</i>	Lily	<1	<1	<1	<1	<1	<1	8.3
	<i>Penstemon sp</i>	Penstemon	<1	<1	<1	<1	<1	<1	8.3
	<i>Phlox hoodii</i>	Hoods Phlox	0.2	0.4	0.1	0.0	1.0	0.3	41.7
	Unknown Perennial Forb		0.1	0.3	0.1	0.0	1.0	0.2	8.3
		Sub-total	0.5	0.7	0.2	0.0	1.0	0.9	

Gold Hill Baseline Vegetation Assessment

Table 2 (cont)

	Scientific Name	Common Name	Avg	St Dev	St Error	Low	High	Rel Cover	Frequen
Annual and biennial forbs									
	<i>Halogeton glomeratus</i>	Halogeton	1.4	3.4	0.7	0.0	10.0	2.6	25.0
	<i>Phacelia crenulata</i>	Crenulate phacelia	0.1	0.3	0.1	0.0	1.0	0.2	8.3
	<i>Sisymbrium altissimum</i>	Tumbling Hedge Mustard	<1	<1	<1	<1	<1	<1	16.7
		Sub-total	1.5	3.6	1.0	0.0	10.0	2.8	
Sub-shrubs									
	<i>Bassia americana</i>	Gray Molly	<1	<1	<1	<1	<1	<1	18.2
	<i>Gutierrezia sarothrae</i>	Broom Snakeweed	<1	<1	<1	<1	<1	<1	9.1
		Sub-total	0.0	0.0	0.0	0.0	0.0	0.0	
Shrubs									
	<i>Artemisia nova</i>	Black sagebrush	1.7	3.4	0.9	0.0	10.0	3.1	33.3
	<i>Artemisia tridentata tridentata</i>	Basin big sagebrush	1.2	4.0	1.2	0.0	14.0	2.4	16.7
	<i>Artemisia tridentata var wyomingensis</i>	Wyoming big sagebrush	20.6	11.2	3.2	0.0	40.0	38.7	91.7
	<i>Atriplex confertifolia</i>	Shadscale	0.3	0.6	0.2	0.0	2.0	0.5	33.3
	<i>Chrysothamnus nauseosus</i>	Rubber Rabbitbrush	<1	<1	<1	<1	<1	<1	8.3
	<i>Chrysothamnus viscidiflorus</i>	Rabbitbrush	3.0	3.2	0.9	0.0	8.0	5.6	91.7
	<i>Ephedra viridis</i>	Green Mormon tea	1.1	1.3	0.4	0.0	4.0	2.0	66.7
	<i>Grayia spinosa</i>	Spiny hopsage	3.8	4.1	1.2	0.0	13.0	7.2	66.7
	<i>Sarcobatus vermiculatus</i>	Black Greasewood	2.0	4.8	1.4	0.0	15.0	3.8	25.0
	<i>Symphoricarpos longiflorus</i>	Snowberry	<1	<1	<1	<1	<1	<1	8.3
	<i>Tetradymia glabrata</i>	Littleleaf horsebrush	<1	<1	<1	<1	<1	<1	16.7
	<i>Tetradymia nuttallii</i>	Nuttall's horsebrush	<1	<1	<1	<1	<1	<1	16.7
		Sub-total	33.7	10.6	3.0	0.0	45.0	63.3	
Cacti and succulents									
	<i>Opuntia polyacantha</i>	Plains Prickly Pear	0.3	0.5	0.1	0.0	1.0	0.5	33.3
		Sub-total	0.3	0.5	0.1	0.0	1.0	0.5	
Trees									
	<i>Juniperus osteosperma</i>	Utah juniper	0.3	1.2	0.3	0.0	4.0	0.6	16.7
	<i>Pinus monophylla</i>	Single leaf pinyon	0.5	1.0	0.3	0.0	3.0	0.8	50.0
		Sub-total	0.8	2.1	0.6	0.0	4.0	1.4	
Average # of second hits: 16									

Pinyon/Juniper Community: Singleleaf pinyon together with Utah juniper covers 21.2% of the total acreage of the mine sites. Total average vegetation cover in this community type is 42.9 +/-7.6%% with litter at an average of 14.7%, rock at 11.0%, gravel at 9.7% and bare soil at 26.0%. (See Table 3)

Although pinyon/juniper communities are found on every soil type and exposure across the study area, juniper is more drought and cold tolerant than pinyon, thus they tend to dominate sites at the lower and upper elevation ranges (See Figure 5). Pinyon typically dominates the mid-range elevations where both species occur. Generally the understory of pinyon/juniper communities is composed of species found in adjacent communities.

All grass species combined contributed 5.7% to the total vegetation cover (13.3% relative cover). The most common cool season perennial grass is Sandberg's bluegrass with an average total cover of 3.9% (9.1% relative cover), followed by Indian ricegrass (0.6% total cover) and bluebunch wheatgrass (0.5% total cover). All life classes of forbs (perennials, annuals, biennials) contributed only 1.1% of the total cover. Common forbs found in this community include carpet phlox (*Phlox hoodii*) and Beckwith's milkvetch (*Astragalus beckwithii*).

Average total shrub cover is 9.0%, which translates to 20.9% relative cover. Within the shrub layer black sagebrush accounts for 5.5%, Wyoming big sagebrush is 0.9% and viscid rabbitbrush is 0.8% (total cover). Other shrubs of note but minor cover include cliffrose (*Purshia Mexicana* var. *stansburyana*), green ephedra (*Ephedra viridis*), Basin big sagebrush, and hopsage.

(See soil and vegetation maps in Appendix A)



Figure 6. Pinyon/juniper community interspersed with black sagebrush overlooking Bonneville basin.

Gold Hill Baseline Vegetation Assessment

Table 3. Pinyon/juniper community

	Pinyon / juniper Gold Hill n=10								
	Scientific Name	Common Name	Avg	St Dev	St Error	Low	High	Rel cover	Frequenc
Total Vegetation Cover			42.9	7.6	2.4	30.0	56.0		
Litter			14.7	4.4	1.3	10.0	22.0		
Rock			11.0	7.4	2.8	1.0	21.0		
Gravel			9.7	6.2	2.1	3.0	20.0		
Bare Soil			26.0	7.9	2.5	17.0	37.0		
Total Ground Cover			74.0	7.9	2.5	63.0	83.0		
Cool season perennial grasses									
	<i>Elymus cinereus</i>	Great Basin Wildrye	0.0	0.0	0.0	0.0	0.0	0.0	10.0
	<i>Elymus elymoides</i>	Bottlebrush Squirreltail	0.3	0.7	0.2	0.0	2.0	0.5	70.0
	<i>Elymus spicatus</i>	Bluebunch Wheatgrass	0.5	1.0	0.3	0.0	3.0	1.2	30.0
	<i>Poa fendleriana</i>	Muttongrass	<1	<1	<1	<1	<1	<1	10.0
	<i>Poa sandbergii</i>	Sandberg Bluegrass	3.9	2.4	0.8	1.0	9.0	9.1	100.0
	<i>Stipa comata</i>	Needle-and-thread Grass	0.4	1.3	0.4	0.0	4.0	0.9	40.0
	<i>Stipa hymenoides</i>	Indian Ricegrass	0.6	1.0	0.3	0.0	3.0	1.4	70.0
		Sub-total	5.7	3.7	1.2	1.0	13.0	13.3	
Annual grasses									
	<i>Bromus tectorum</i>	Cheatgrass	0.6	0.7	0.2	0.0	2.0	1.4	100.0
		Sub-total	0.6	0.7	0.2	0.0	2.0	1.4	
Perennial forbs									
	<i>Antennaria microphylla</i>	Littleleaf Pussytoes	<1	<1	<1	<1	<1	<1	10.0
	<i>Astragalus beckwithii</i>	Beckwith's milkvetch	0.2	0.6	0.2	0.0	2.0	0.5	20.0
	<i>Astragalus lentiginosus var araneosus</i>	Cobweb milkvetch	<1	<1	<1	<1	<1	<1	10.0
	<i>Astragalus spp</i>	Milkvetch	0.1	0.3	0.1	0.0	1.0	0.2	20.0
	<i>Astragalus utahensis</i>	Utah lady finger	<1	<1	<1	<1	<1	<1	10.0
	<i>Boechera sp</i>	Rockcress	0.1	0.3	0.1	0.0	1.0	0.2	30.0
	<i>Castilleja sp</i>	Paintbrush	0.1	0.3	0.1	0.0	1.0	0.2	10.0
	<i>Caulanthus crassicaulis</i>	Spindlestem	<1	<1	<1	<1	<1	<1	20.0
	<i>Cryptantha flavoculata</i>	Cat's eye	<1	<1	<1	<1	<1	<1	10.0
	<i>Cryptantha spp</i>	Cat's Eye	<1	<1	<1	<1	<1	<1	20.0
	<i>Erigeron spp</i>	Fleabane	<1	<1	<1	<1	<1	<1	10.0
	<i>Eriogonum sp</i>	Eriogonum sp	<1	<1	<1	<1	<1	<1	20.0
	Liliaceae	Lily	<1	<1	<1	<1	<1	<1	10.0
	<i>Phlox hoodii</i>	Hoods Phlox	0.6	1.3	0.4	0.0	4.0	1.4	70.0
	<i>Stanleya pinnata</i>	Prince's plume	0.0	0.0	0.0	0.0	0.0	0.0	10.0
		Sub-total	1.1	1.5	0.5	0.0	4.0	2.6	

Gold Hill Baseline Vegetation Assessment

Table 3 (cont)

	Scientific Name	Common Name	Avg	St Dev	St Error	Low	High	Rel cover	Frequenc
Annual and biennial forbs									
	<i>Brassica nigra</i>	Black mustard	<1	<1	<1	<1	<1	<1	10.0
	<i>Machaeranthera canescens</i>	Silvery Aster	<1	<1	<1	<1	<1	<1	10.0
	<i>Stellaria sp</i>	Chickweed	<1	<1	<1	<1	<1	<1	30.0
		Sub-total	0.0	0.0	0.0	0.0	0.0	0.0	
Sub-shrubs									
	<i>Gutierrezia sarothrae</i>	Broom Snakeweed	<1	<1	<1	<1	<1	<1	10.0
	<i>Krascheninnikovia lanata</i>	Winterfat	<1	<1	<1	<1	<1	<1	10.0
	<i>Leptodactylon pungens</i>	Prickly gilia	0.1	0.3	0.1	0.0	1.0	0.2	10.0
		Sub-total	0.1	0.3	0.1	0.0	1.0	0.2	
Shrubs									
	<i>Artemisia nova</i>	Black sagebrush	5.5	4.1	1.3	0.0	11.0	12.8	90.0
	<i>Artemisia tridentata</i>	Big Sagebrush	0.6	1.9	0.6	0.0	6.0	1.4	10.0
	<i>Artemisia tridentata</i> var <i>wyomingensis</i>	Wyoming big sagebrush	0.9	1.9	0.6	0.0	5.0	2.1	30.0
	<i>Atriplex confertifolia</i>	Shadscale	<1	<1	<1	<1	<1	<1	20.0
	<i>Chrysothamnus viscidiflorus</i>	Rabbitbrush	0.8	1.3	0.4	0.0	4.0	1.8	50.0
	<i>Ephedra viridis</i>	Green Mormon tea	0.4	1.0	0.3	0.0	3.0	0.9	60.0
	<i>Grayia spinosa</i>	Spiny hopsage	0.2	0.6	0.2	0.0	2.0	0.5	20.0
	<i>Purshia mexicana</i>	Cliffrose	0.5	1.6	0.5	0.0	5.0	1.2	10.0
	<i>Symphoricarpos longiflorus</i>	Snowberry	0.1	0.3	0.1	0.0	1.0	0.2	10.0
	<i>Tetradymia nuttallii</i>	Nuttall's horsebrush	0.0	0.0	0.0	0.0	0.0	0.0	10.0
		Sub-total	9.0	3.9	1.3	0.0	14.0	20.9	
Trees									
	<i>Juniperus osteosperma</i>	Utah juniper	14.0	6.1	1.9	5.0	25.0	32.6	100.0
	<i>Pinus monophylla</i>	Single leaf pinyon	12.4	5.7	1.8	0.0	19.0	28.9	100.0
		Sub-total	29.0	11.6	3.7	0.0	29.0	61.5	
Average # of second hits: 9									

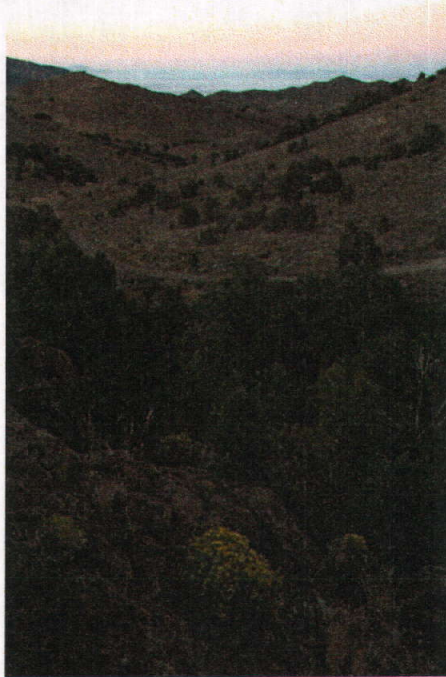


Figure 7. Photo of pinyon juniper community interspersed with sagebrush communities

SOILS

The following soil types are found within the parcels. All soil descriptions were derived from USDA- Soil Survey of Tooele Area, Utah (NRCS Soil Survey issued 2000).

Soil type 4- Amtoft-Rock outcrop complex, 30 to 70 percent slopes.

This soil is typically composed of 65% Amtoft very cobbly loam, 15% rock outcrop and 20% other soils, and is found on mountainsides and hillsides. The Amtoft soil is shallow and somewhat excessively drained and formed in residuum and colluvium derived dominantly from limestone. Rock outcrops consist of exposures of nearly barren limestone, mainly on escarpments and ridges. Small inclusions of other soils include the shallow Lodar and Lundy soils on upper slopes under Utah Juniper and singleleaf pinyon, shallow Checkett soils under black sagebrush, Hiko Peak and Spager soils on high fan remnants and deep Cliffdown soils on low fan remnants under Wyoming big sagebrush. This soil type occurs on 6 of the 11 parcels including Rustler, Lucy Pit, Frankie Pit, Kiewit Leach, Kiewit Mine, and Cactus Mill (See soil and vegetation maps in Appendix A)

Soil type 11- Checkett-Rock outcrop complex, 10 to 40 percent slopes.

This soil is composed of about 75% Checkett very cobbly loam, 10% Rock outcrop, and 15% other soils and is found on mountainsides and hillsides. The Checkett soils are shallow and well drained, and formed from residuum and colluvium derived mainly from igneous and metamorphic rocks.

Rock outcrops occur on escarpments and ridges. Small inclusions of Hiko Peak soils occur on fan remnants and in drainage ways and shallow Reywat soils occur on north facing mountainsides and areas with slopes greater than 40%. Present vegetation in most areas is black sagebrush, cheatgrass, Sandberg's bluegrass and Indian ricegrass.

This soil type occurs on 2 of 11 parcels including Kiewit Mine and Cactus Mill (See soil and vegetation maps in Appendix A)

Soil type 21- Hiko Peak gravelly loam, 2 to 15 percent slopes.

Hiko Peak soil is a very deep and well drained- formed in alluvium derived from mixed rock sources and is found on fan remnants. Included in about 10% of this mapping unit are small areas of loamy Medburn soils on the shallower sloping lower fan remnants, the sandy Berent soils of stabilized sand dunes under juniper, and Sprager soils in positions similar to those of the Hiko Peak soil. Present vegetation in most areas of Hiko Peak soil is pinyon/ juniper communities, Wyoming sagebrush communities with rubber and viscid rabbitbrush along arroyos. Greasewood occurs where this unit enters the Cactus Mill site at the north east corner.

This soil type occurs on 2 of 11 parcels including Cactus Mill and under the majority of the area on Kiewit Leach (See soil and vegetation maps in Appendix A)

Soil type 48- Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes.

The unit is about 45% Reywat very cobbly loam mainly on droughty south aspects or on short or medium length convex slopes of hills and mountainsides. Reywat is a shallow and well drained soil formed in residuum and colluvium derived dominantly from quartzite and igneous rocks. About 30% of the unit is the Broad soil- a moderately deep and well drained cobbly loam formed in residuum and colluviums from quartzite and sandstone. Broad soil is found mainly on moister north aspects. Rock outcrops compose about 10% of the unit and are barren bedrock on escarpments and ridges. Rock outcrops and other soils comprise a total of 25% of the unit and include small areas of deep Abela soils that are found in drainage ways. Shallow Lodar soils are found in landscape positions similar to the Reywat and shallow Lundy soils in positions similar to the Broad soils.

This soil unit supports pinyon/juniper, black sagebrush and Wyoming sagebrush communities and occurs on 8 of 11 of the parcels including Frankie Pit, Lucy Pit, North Area, Kiewit Leach and Yellow Hammer.

(See soil and vegetation maps in Appendix A).

Conclusion

Overall, 310.6 acres were examined for this study. The community type acreages and percentage of the total area were: Basin Big Sagebrush 2.7 acres (<1%), black sagebrush 126.7 acres (41%), singleleaf pinyon/ Utah Juniper 65.8 acres (21.2%), Wyoming big sagebrush 96.6 acres (31.1%), rubber rabbitbrush 4.2 acres (1.3%), and disturbed areas comprised 13.9 acres (4.3%).

Plant community types were correlated with landscape position and soil type and depths. Soils supporting black sagebrush are typically shallow and xeric. Pinyon/juniper communities are found on every major soil unit and exposure across the study area, however juniper was over twice as prevalent as pinyon. Diversity and percent cover for grasses and forbs are relatively low for all communities, perhaps due to a combination of numerous record dry years and grazing pressure in some areas.

To reach an acceptable vegetation cover in each of these vegetation types for future bond release, the lands must exhibit 70% of the baseline vegetation cover. Thus, the following vegetation cover targets for each community type are:

Black sagebrush: 25% +/- 8% total vegetation cover

Wyoming sagebrush: 36% +/- 8% total vegetation cover

Pinyon/juniper: 30% +/- 7% vegetation cover

Although the vegetation communities are distinct in this area, most share common species that are readily available for reclamation. At the time of reclamation, it is suggested to add a forb to the mix. Availability of forb seeds varies greatly and it would likely be best to seek an appropriate forb for this mix at the time of reclamation. The following seed mix is suggested for reclamation in these areas:

Black sagebrush

Common name	Scientific name	Variety	PLS lbs	# seeds/lb	% of mix
Sandberg's bluegrass	<i>Poa secunda</i>		0.75	925000	24
Indian ricegrass	<i>Oryzopsis hymenoides</i>	Rimrock	3	183000	19
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	P-7	5	125680	22
Bottlebrush squirreltail	<i>Elymus elymoides</i>		3	191555	20
Shrubs					
Black sagebrush	<i>Artemisia nova</i>		0.5	907200	15
		Total PLS lbs	12.3		
		Seeds/sq ft.	67		

APPENDIX A - Vegetation and Soil Types

Figure 1. Cactus Mill vegetation types, soil types and transect locations (UTM NAD 83 CONUS)



Figure 2. Frankie Pit soil types, vegetation types and transect locations (UTM NAD 83 CONUS).



Figure 3. Lucy Pit soil types, vegetation types and transect locations (UTM NAD 83 CONUS)

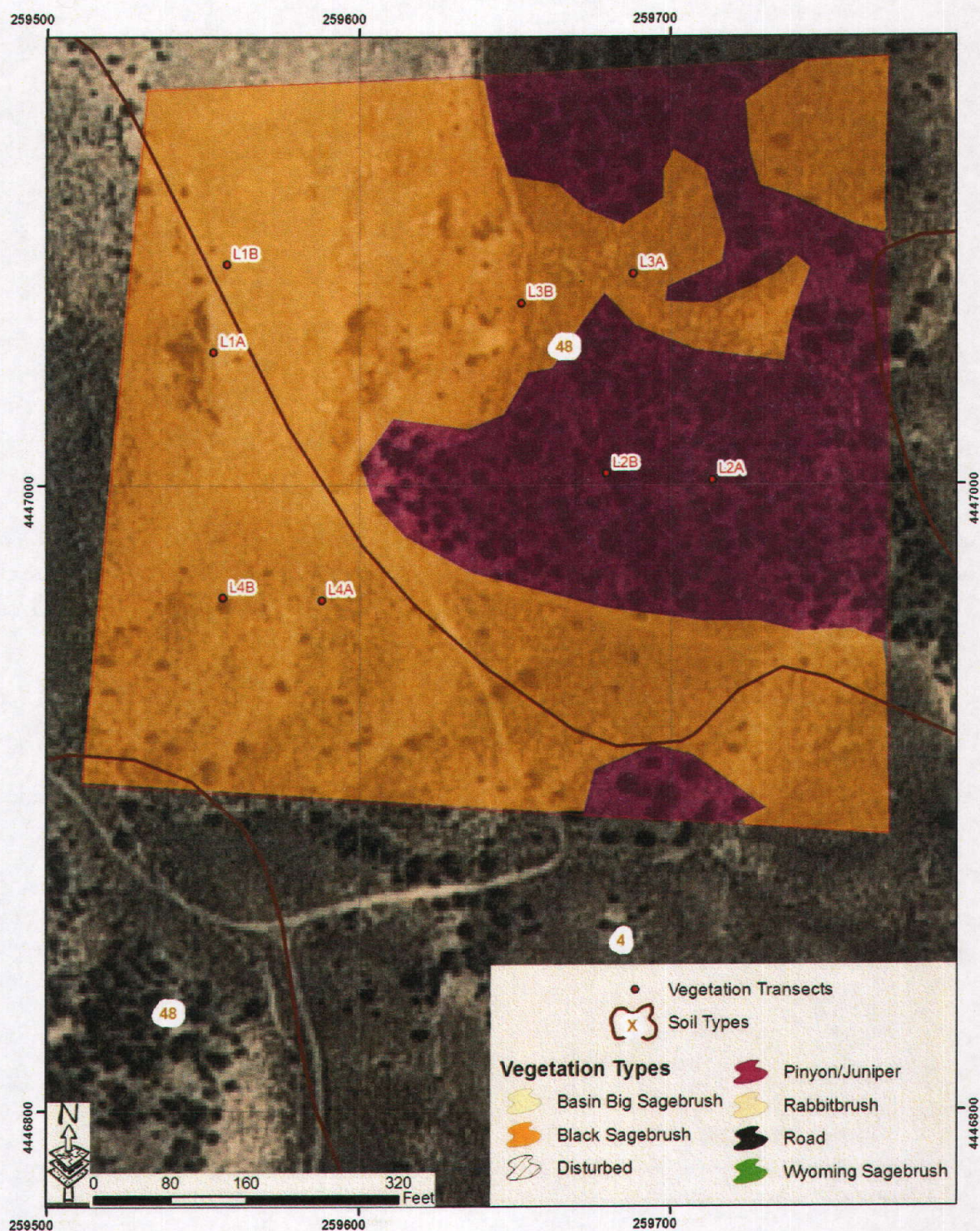


Figure 4. North Area soil types, vegetation types and transect locations (UTM NAD 83 CONUS)



Figure 5. Yellow Hammer complex soil types, vegetation types and transect locations (UTM NAD 83 CONUS)

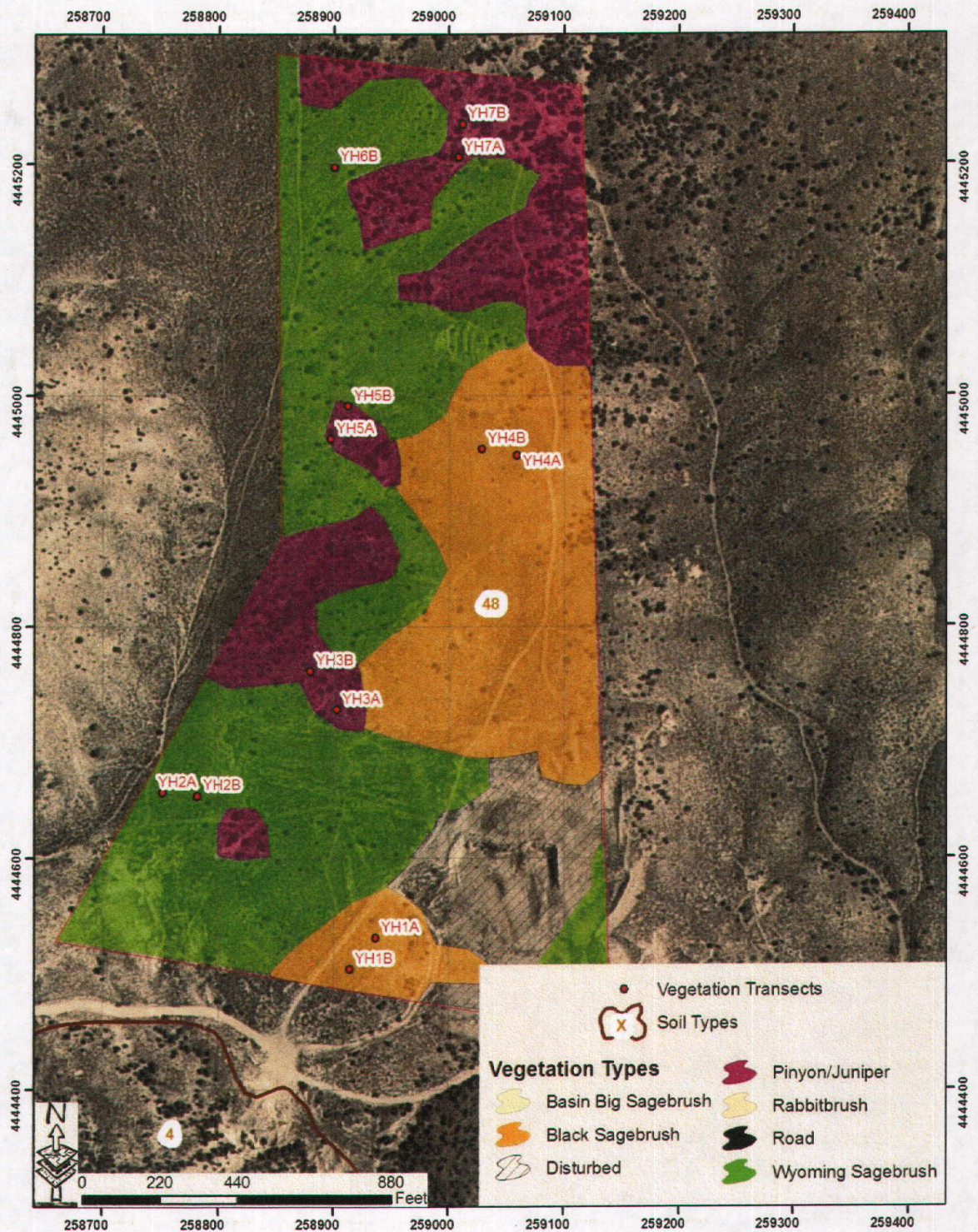


Figure 6. Rustler soil types, vegetation types and transect locations (UTM NAD 83 CONUS)

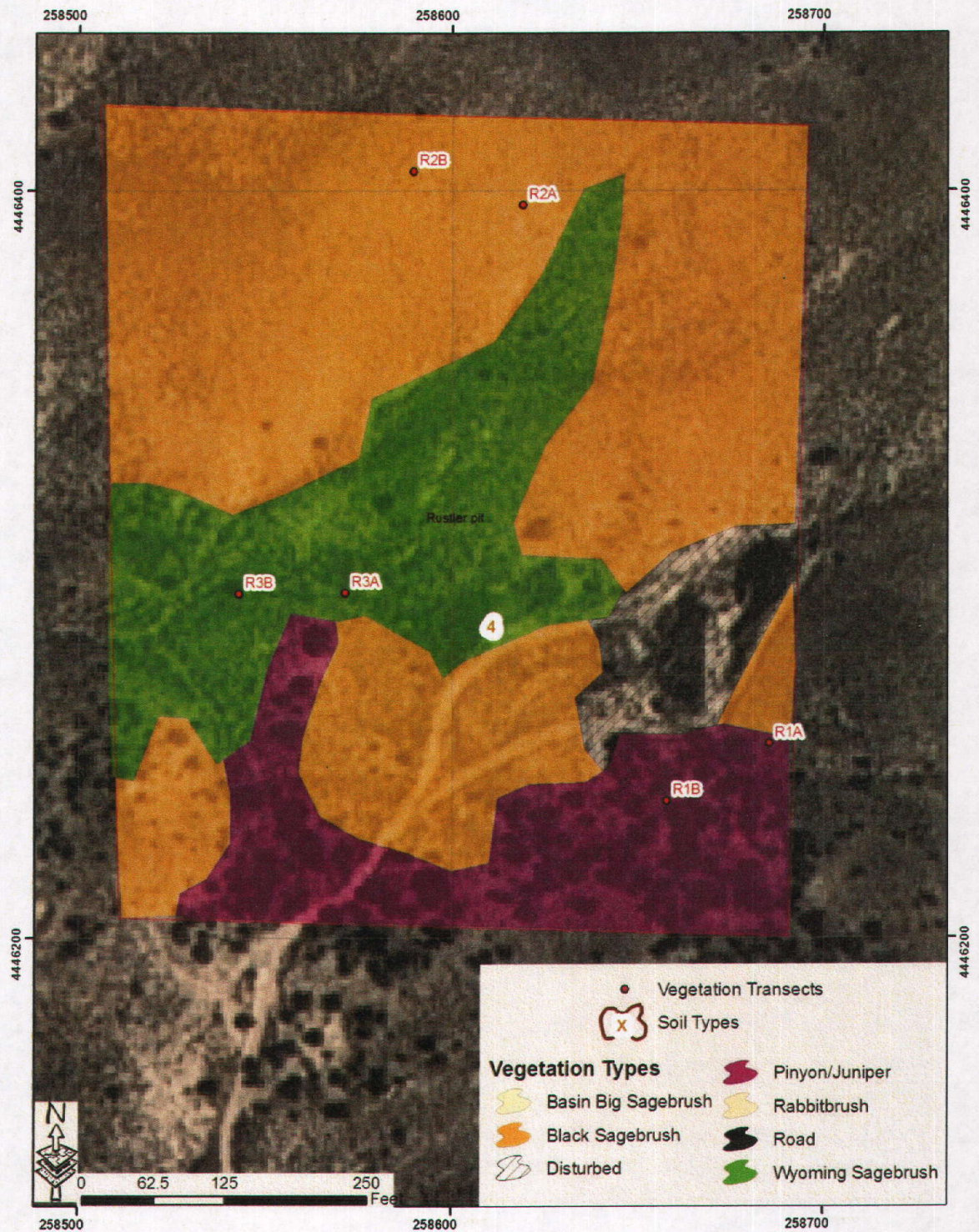


Figure 7. Kiewit Lech soil types, vegetation types and transect locations

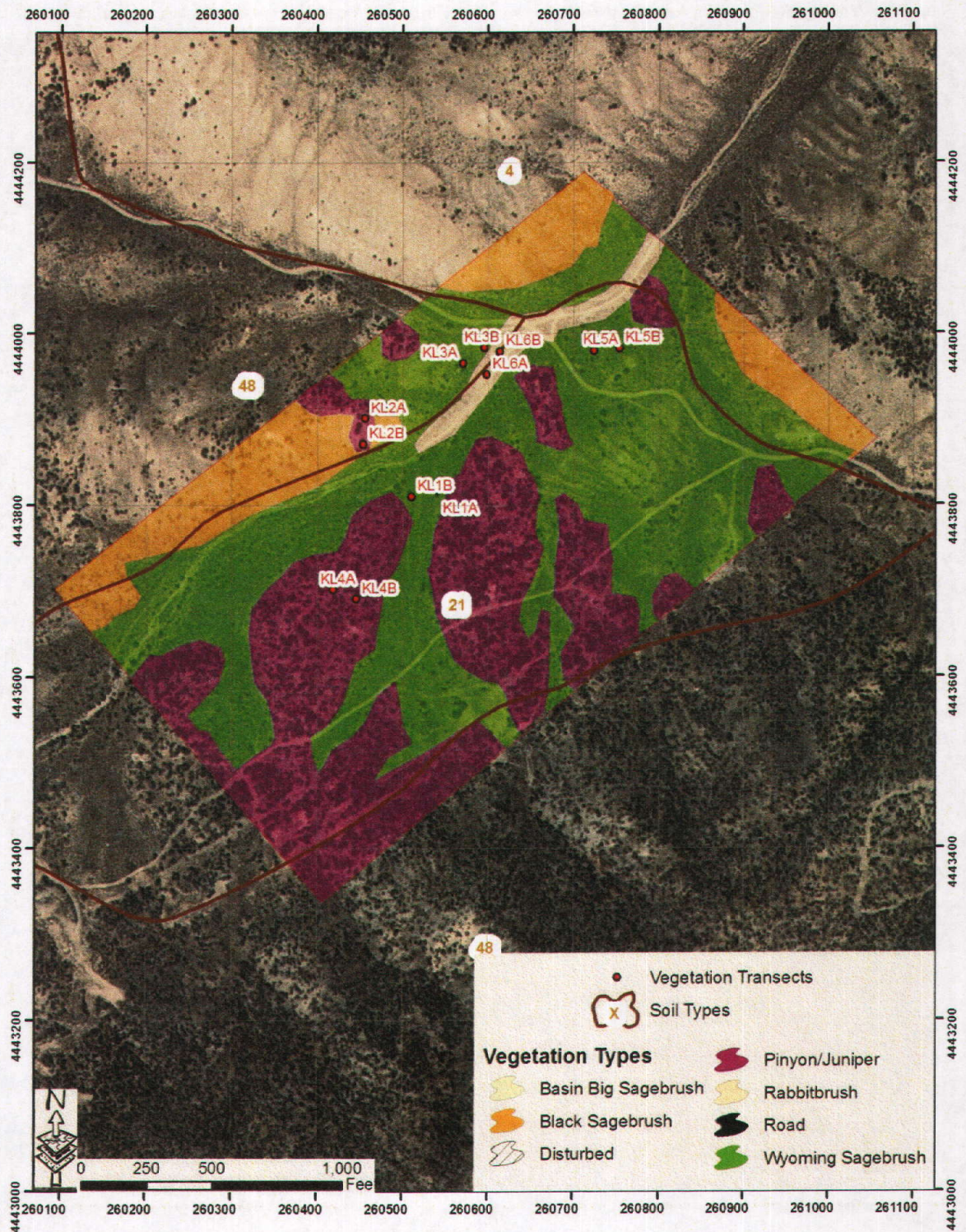
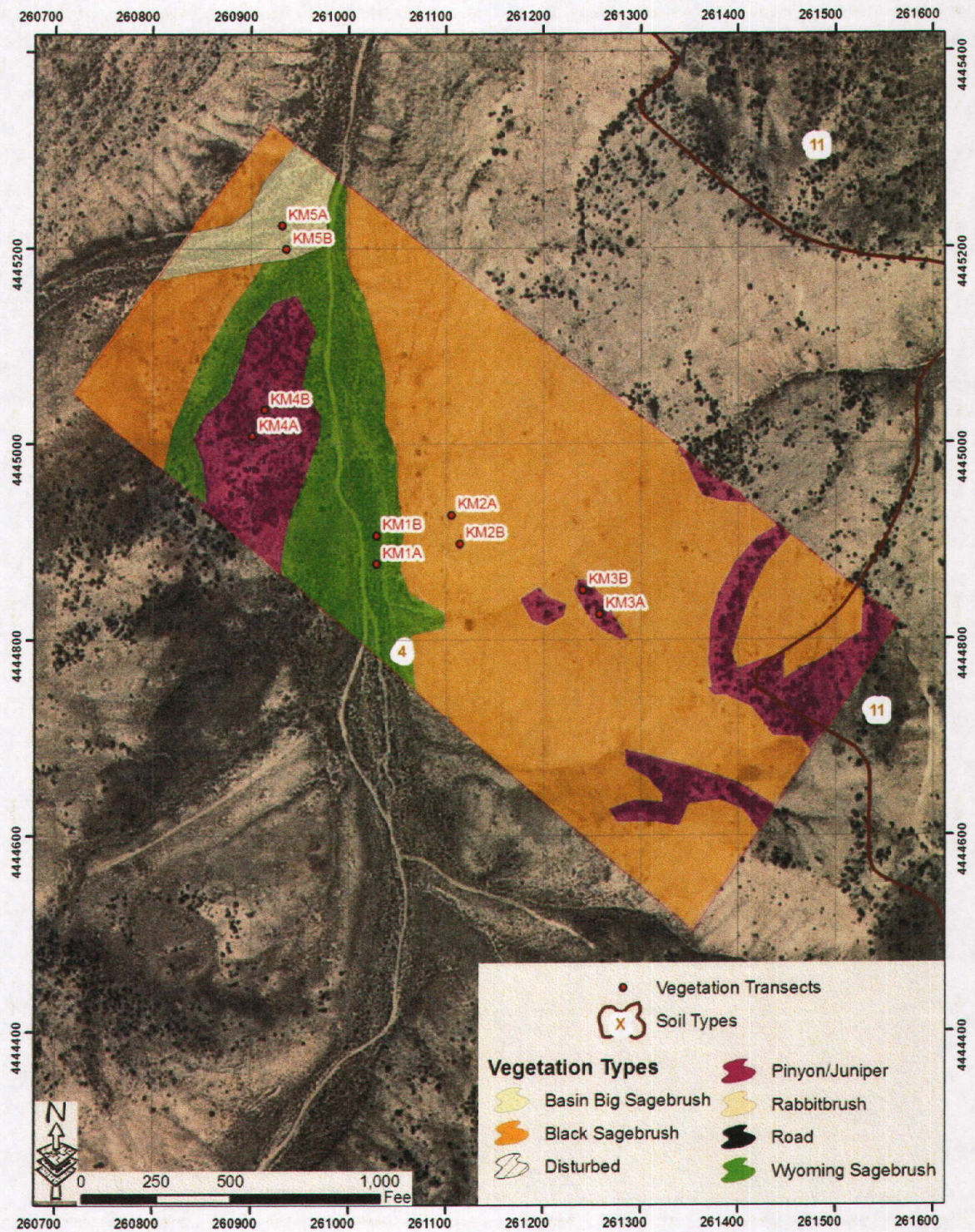
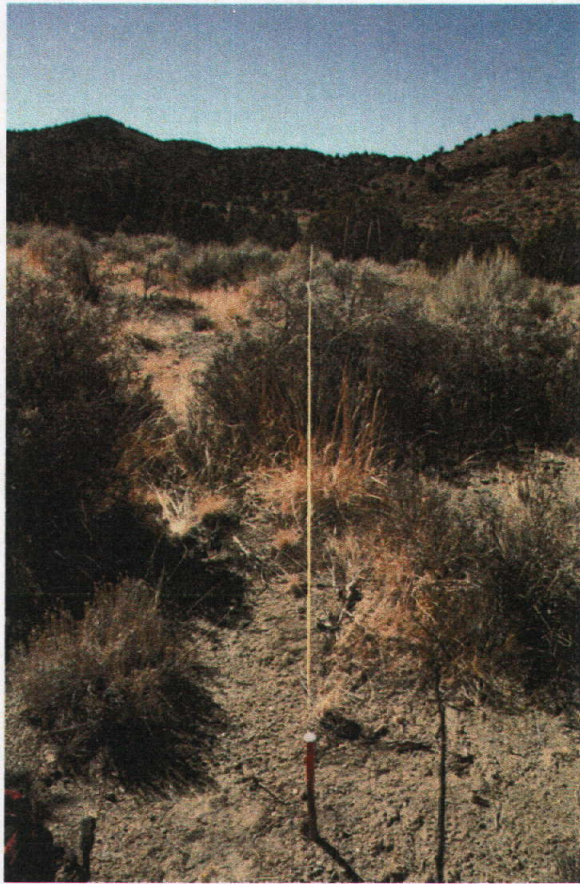


Figure 8. Kiewit Mine soil types, vegetation types and transect locations



APPENDIX B- TRANSECT PHOTOGRAPHS

Gold Hill Properties- Vegetation Survey



Kiewit Leach- Transect KL1- Point A, Photo 5142
View looking west north west.

Wyoming Big Sage Community

Soil type 21- Hiko Peak gravelly loam, 2 to 15% slopes.

Principal vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Hopsage (*Grayia spinosa*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Cheatgrass (*Bromus tectorum*), Squirreltail (*Elymus elymoides*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Bluebunch wheatgrass (*Elymus spicatus*), Great Basin Wildrye (*Elymus cinereus*), Singleleaf Pinyon (*Pinus monophylla*), *Cryptantha* species, *Asteraceae* species, *Polemoniaceae* species, *Opuntia* species and Indian Ricegrass (*Stipa hymenoides*).

WP Natural Resource Consulting, Inc.



Kiewit Leach- Transect KL1- Point B, Photo 5145
View looking east south east.

Other species noted within 3' each side of the transect include *Astragalus* species, *Castilleja* species, Utah Juniper (*Juniperus osteosperma*) and Green Ephedra (*Ephedra viridis*).

Gold Hill Properties- Vegetation Survey



Kiewit Leach- Transect KL2- Point A, Photo 5146
View looking south.

Pinyon/Juniper Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Singleleaf
Pinyon (*Pinus monophylla*) and Utah Juniper
(*Juniperus osteosperma*) and Black sagebrush
(*Artemisia nova*).

Minor vegetation components Sandberg's bluegrass
(*Poa secunda*), Indian Ricegrass (*Stipa hymenoides*),
Bluebunch wheatgrass (*Elymus spicatus*), Winterfat
(*Krascheninnikovia lanata*) and Green Ephedra
(*Ephedra viridis*).



Kiewit Leach- Transect KL2- Point B, Photo 5147
View looking north.

Other species noted within 3' each side of the
transect include *Eriogonum* species, Roughseed
Cryptanth (*Cryptantha flovoculata*), Cheatgrass
(*Bromus tectorum*), Muttongrass (*Poa fendleriana*)
and Viscid rabbitbrush (*Chrysothamnus viscidiflorus*).

Gold Hill Properties- Vegetation Survey



Kiewit Leach- Transect KL3- Point A, Photo 5149
View looking north east.

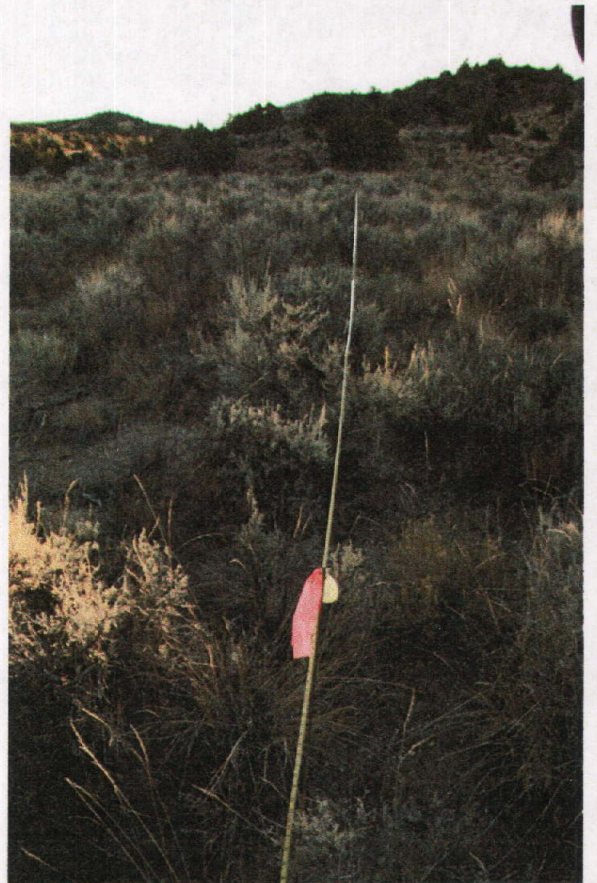
Wyoming Big Sagebrush community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Bluebunch wheatgrass (*Elymus spicatus*), Sandberg's bluegrass (*Poa secunda*), Squirreltail (*Elymus elymoides*) and Hopsage (*Grayia spinosa*).

Minor vegetation components include Green Ephedra (*Ephedra viridis*), Great Basin Wildrye (*Elymus cinereus*), Cheatgrass (*Bromus tectorum*), Roughseed Cryptanth (*Cryptantha flovoculata*) and Indian Ricegrass (*Stipa hymenoides*).

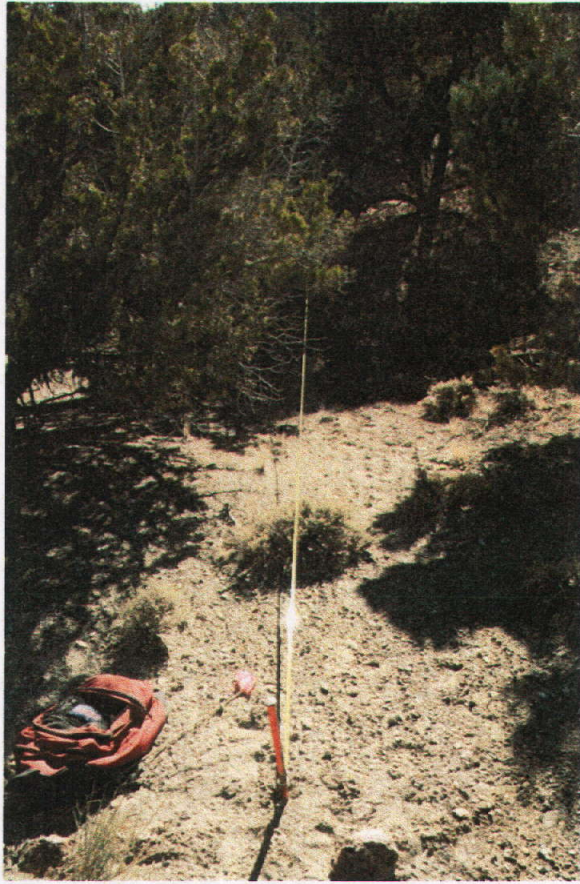
WP Natural Resource Consulting, Inc.



Kiewit Leach- Transect KL3- Point B, Photo 5150
View looking south west.

Other species noted within 3' each side of the transect include Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Carpet phlox (*Phlox hoodii*), *Opuntia* species, Muttongrass (*Poa fendleriana*), Sego Lily (*Calochortus nutallii*) and cryptobiotic crusts.

Gold Hill Properties- Vegetation Survey



Kiewit Leach- Transect KL4- Point A, Photo 5151
View looking east south east.

Pinyon/Juniper Community

Soil type 21- Hiko Peak gravelly loam, 2 to 15% slopes.

Principal vegetation components include Singleleaf Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus osteosperma*), Black sagebrush (*Artemisia nova*) and Sandberg's bluegrass (*Poa secunda*).



Kiewit Leach- Transect KL4- Point B, Photo 5152
View looking west north west.

Other species noted within 3' each side of the transect include Squirreltail (*Elymus elymoides*), Cheatgrass (*Bromus tectorum*), Indian Ricegrass (*Stipa hymenoides*), *Astragalus* species, Carpet phlox (*Phlox hoodii*), *Phlox* species, *Cryptantha* species and *Boechera* species.

Gold Hill Properties- Vegetation Survey



Kiewit Leach- Transect KL5- Point A, Photo 5153
View looking north west.

Wyoming Big Sagebrush Community

Soil type 21- Hiko Peak gravelly loam, 2 to 15% slopes.

Principal vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Hopsage (*Grayia spinosa*), Sandberg's bluegrass (*Poa secunda*), Needle-and-thread grass (*Stipa comata*), Great Basin Wildrye (*Elymus cinereus*), and Cheatgrass (*Bromus tectorum*).

Minor vegetation components include Singleleaf Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus osteosperma*), Green Ephedra (*Ephedra viridis*), Carpet phlox (*Phlox hoodii*), Bluebunch wheatgrass (*Elymus spicatus*), Galleta (*Hilaria jamesii*), Indian Ricegrass (*Stipa hymenoides*) and Squirreltail (*Elymus elymoides*).

WP Natural Resource Consulting, Inc.



Kiewit Leach- Transect KL5- Point B, Photo 5154
View looking south east.

Other species noted within 3' each side of the transect include *Cryptantha* species, *Penstemon* species and Spindlestem (*Caulanthus crassicaulis*). Cryptobiotic soils present.

Gold Hill Properties- Vegetation Survey



Kiewit Leach- Transect KL6- Point A, Photo 5155
View looking north east.

Rubber Rabbitbrush Community

Soil type 21- Hiko Peak gravelly loam, 2 to 15% slopes.

Principal vegetation components include Rubber Rabbitbrush (*Chrysothamnus naseosus*), Squirreltail (*Elymus elymoides*), Crested Wheat (*Agropyron cristatum*) and Viscid rabbitbrush (*Chrysothamnus viscidiflorus*).

Minor vegetation components include Indian Ricegrass (*Stipa hymenoides*), Needle-and-thread grass (*Stipa comata*), Bluebunch wheatgrass (*Elymus spicatus*), Great Basin Wildrye (*Elymus cinereus*), Sandberg's bluegrass (*Poa secunda*), Cheatgrass (*Bromus tectorum*) and Palmer's Penstemon (*Penstemon palmeri*) and *Astragalus* species.



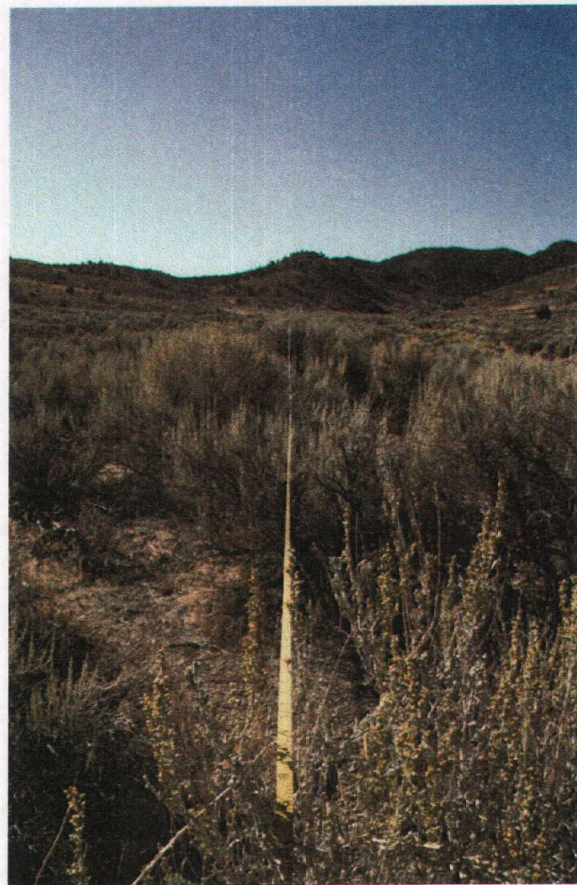
Kiewit Leach- Transect KL6- Point B, Photo 5156
View looking south west.

Other species noted within 3' each side of the transect include *Linum* species and Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*).

Gold Hill Properties- Vegetation Survey



Kiewit Mine- Transect KM1- Point A, Photo 5116
View looking north.



Kiewit Mine- Transect KM1- Point B, Photo 5117
View looking south.

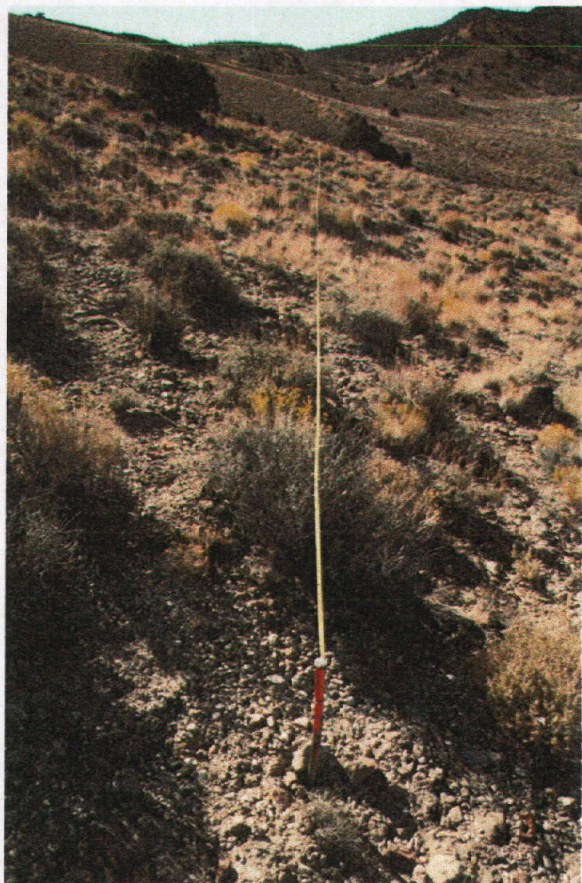
Wyoming Big Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Common vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Hopsage (*Grayia spinosa*) and Cheatgrass (*Bromus tectorum*).

Minor vegetation components include Sandberg's bluegrass (*Poa secunda*), Indian Ricegrass (*Stipa hymenoides*) and Squirreltail (*Elymus elymoides*).

Gold Hill Properties- Vegetation Survey



Kiewit Mine- Transect KM2- Point A, Photo 5118
View looking south south east.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Common vegetation components include Black sagebrush (*Artemisia nova*), Littleleaf horsebrush (*Tetradymia glabrata*), Bluebunch wheatgrass (*Elymus spicatus*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Shadscale (*Atriplex confertifolia*), Thread snakeweed (*Gutierrezia microcephala*), Cheatgrass (*Bromus tectorum*), Indian Ricegrass (*Stipa hymenoides*) and Galleta (*Hilaria jamesii*).



Kiewit Mine- Transect KM2- Point B, Photo 5120
View looking north north west.

Other species within 3' each side of the transect include Spindlestem (*Caulanthus crassicaulis*), *Erigeron* species, *Penstemon* species, and *Chenopodiaceae* species.

Gold Hill Properties- Vegetation Survey



Kiewit Mine- Transect KM3- Point A, Photo 5121
View looking north west.

Pinyon/Juniper Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Singleleaf Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus osteosperma*), Black sagebrush (*Artemisia nova*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Carpet phlox (*Phlox hoodii*) and Bluebunch wheatgrass (*Elymus spicatus*).



Kiewit Mine- Transect KM3- Point B, Photo 5122
View looking south east.

Other species noted within 3' each side of the transect include Broom snakeweed (*Gutierrezia sarothrae*), Prince's plume (*Stanleya pinnata*), Squirreltail (*Elymus elymoides*), Cheatgrass (*Bromus tectorum*), Shadscale (*Atriplex confertifolia*), Erigeron and *Stellaria species*.

Gold Hill Properties- Vegetation Survey



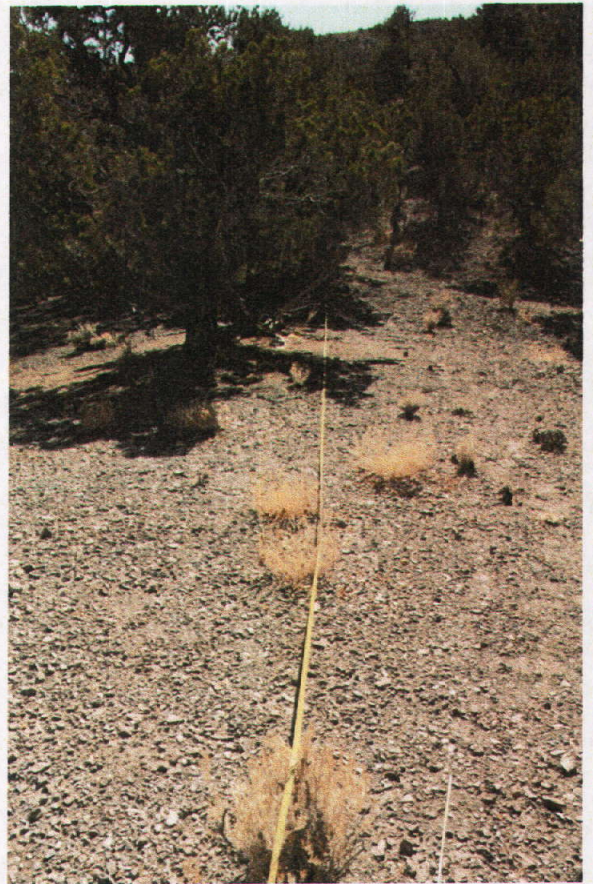
Kiewit Mine- Transect KM4- Point A, Photo 5124
View looking north north east.

Pinyon/Juniper Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Singleleaf Pinyon (*Pinus monophylla*) and Utah Juniper (*Juniperus osteosperma*).

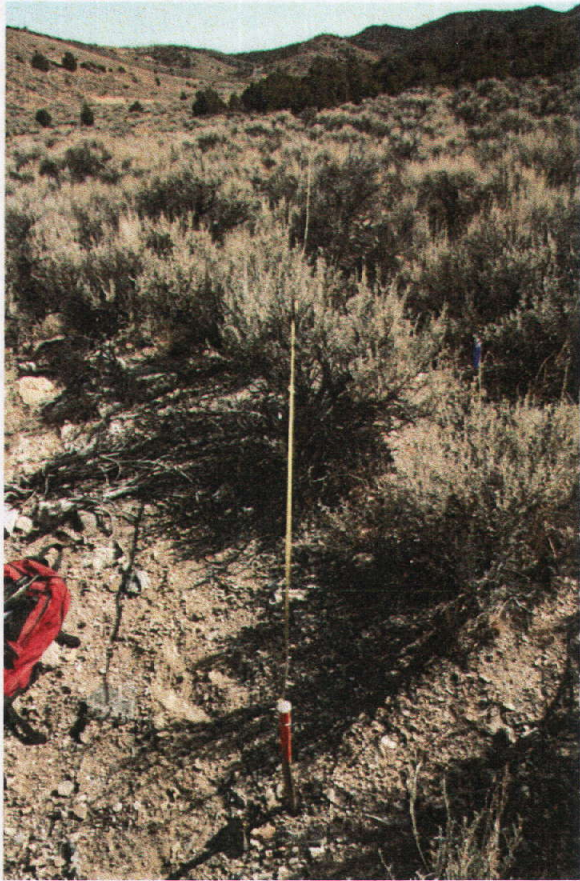
Minor vegetation components include Cliffrose (*Purshia Mexicana* var. *stansburyana*), Carpet phlox (*Phlox hoodii*), Beckwith's milkvetch (*Astragalus beckwithii*), Pungent slenderlobe (*Leptodactylodon pungens*), Nuttall's horsebrush (*Tetradymia nutallii*), Sandberg's bluegrass (*Poa secunda*), and Squirreltail (*Elymus elymoides*).



Kiewit Mine- Transect KM4- Point B, Photo 5126
View looking south south west.

Other species noted within 3' each side of the transect include *Stellaria* species, Black sagebrush (*Artemisia nova*), Spindlestem (*Caulanthus crassicaulis*), Green Ephedra (*Ephedra viridis*) and *Arabis* (*Boechera*) species.

Gold Hill Properties- Vegetation Survey



Kiewit Mine- Transect KM5- Point A, Photo 5128
View looking south.

Artemisia tridentata var. *wyomingensis* community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Basin Big Sagebrush (*Artemisia tridentata* var. *tridentata*) and Cheatgrass (*Bromus tectorum*).

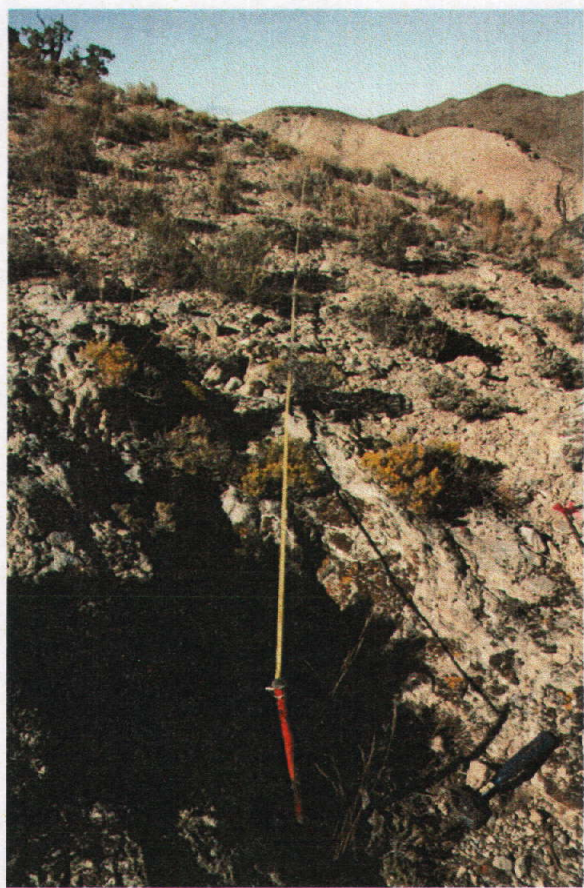
Minor vegetation components include Squirreltail (*Elymus elymoides*), Sandberg's bluegrass (*Poa secunda*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), unknown shrub and *Opuntia* species.



Kiewit Mine- Transect KM5- Point B, Photo 5130
View looking north.

Other species noted within 3' each side of the transect include Green Ephedra (*Ephedra viridis*), Indian Ricegrass (*Stipa hymenoides*), Tumbling mustard (*Sisymbrium altissimum*), *Echium* species, unknown *Brassicaceae* and *Cerastium* species.

Gold Hill Properties- Vegetation Survey



Lucy- Transect L1- Point A, Photo 5314
View looking north.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Soil type 48- Reywat-Broad-Rock outcrop association, 30 to 60 percent slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*) and Goldenweed (*Haplopappus nanus*).

Minor vegetation components include Sandberg's bluegrass (*Poa secunda*), Cheatgrass (*Bromus tectorum*), Unknown grass, *Chenopodiaceae* species and Green Ephedra (*Ephedra viridis*).



Lucy- Transect L1- Point B, Photo 5315
View looking south.

Other species noted within 3' each side of the transect include *Apiaceae* species, Carpet phlox (*Phlox hoodii*), Squirreltail (*Elymus elymoides*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*) and Singleleaf Pinyon (*Pinus monophylla*) seedling.

Gold Hill Properties- Vegetation Survey



Lucy- Transect L2- Point A, Photo 5318
View looking west.

Pinyon/Juniper Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Singleleaf
Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus*
osteosperma) and Sandberg's bluegrass (*Poa*
secunda).

Minor vegetation components include Carpet phlox
(*Phlox hoodii*) and Black sagebrush (*Artemisia nova*).



Lucy- Transect L2- Point B, Photo 5319
View looking east.

Other species noted within 3' each side of the
transect include *Arabis (Boechera) species*, Cobweb
milkvetch (*Astragalus lentiginosus* var. *araneosus*),
Cryptantha species, Cheatgrass (*Bromus tectorum*),
Green Ephedra (*Ephedra viridis*) and *Polemoniace*
species.

Gold Hill Properties- Vegetation Survey



Lucy- Transect L3- Point A, Photo 5320
View looking west.

Black Sagebrush Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*), Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Hopsage (*Grayia spinosa*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Squirreltail (*Elymus elymoides*), Cheatgrass (*Bromus tectorum*), Indian Ricegrass (*Stipa hymenoides*) and Viscid rabbitbrush (*Chrysothamnus viscidiflorus*).



Lucy- Transect L3- Point B, Photo 5323
View looking east.

Other species noted within 3' each side of the transect include *Arabis* (*Boechea*) species, Needle-and-thread grass (*Stipa comata*) and Utah Juniper (*Juniperus osteosperma*) seedling.

Gold Hill Properties- Vegetation Survey



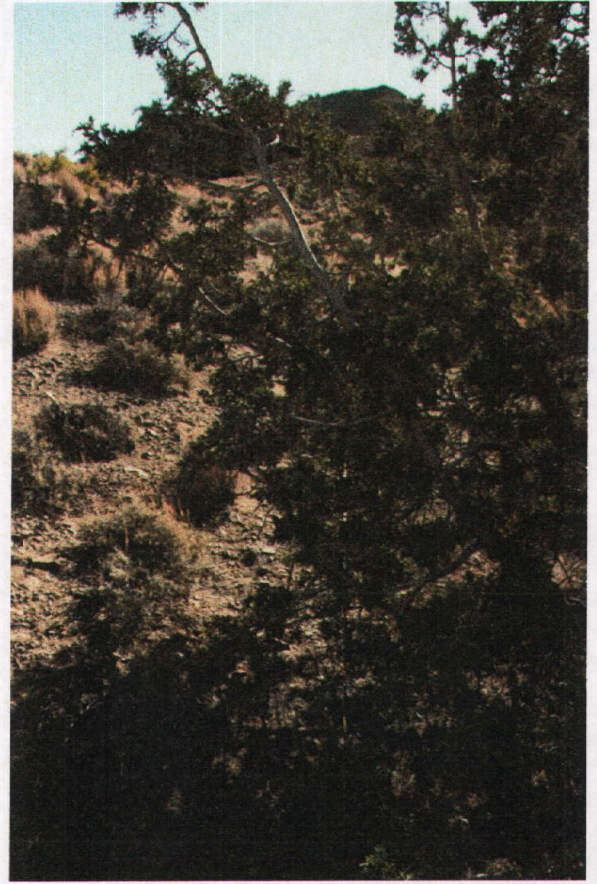
Lucy- Transect L4- Point A, Photo 5338
View looking west.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*) and Littleleaf horsebrush (*Tetradymia glabrata*).

Minor vegetation components include Beckwith's milkvetch (*Astragalus beckwithii*), Halogeton (*Halogeton glomerata*), Squirreltail (*Elymus elymoides*), Indian Ricegrass (*Stipa hymenoides*), Green Ephedra (*Ephedra viridis*), Hopsage (*Grayia spinosa*), Shadscale (*Atriplex confertifolia*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*) and Utah Juniper (*Juniperus osteosperma*).



Lucy- Transect L4- Point B, Photo 5339
View looking east.

Other species noted within 3' each side of the transect include Squirreltail (*Elymus elymoides*), Tr *Arabis* (*Boechera*) species, Crenulate Phacelia (*Phacelia crenulata*), Rubber Rabbitbrush (*Chrysothamnus naseosus*), Needle-and-thread grass (*Stipa comata*), Unknown forb and Wire lettuce (*Stephanomeria pauciflora*).

Gold Hill Properties- Vegetation Survey



North Area- Transect N1- Point A, Photo 5215
View looking north east.

Wyoming Big Sage Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Wyoming
Big Sagebrush (*Artemisia tridentata* var.
wyomingensis), Black sagebrush (*Artemisia nova*) and
Squirreltail (*Elymus elymoides*).

Minor vegetation components include Sandberg's
bluegrass (*Poa secunda*), Cheatgrass (*Bromus
tectorum*), Indian Ricegrass (*Stipa hymenoides*) and
Green Ephedra (*Ephedra viridis*).



North Area- Transect N1- Point B, Photo 5216
View looking south west.

Other species noted within 3' each side of the
transect include Viscid rabbitbrush (*Chrysothamnus
viscidiflorus*), *Opuntia* species, Singleleaf Pinyon (*Pinus
monophylla*) and Snowberry (*Symphoricarpos
longiflorus*).

Gold Hill Properties- Vegetation Survey



North Area- Transect N2- Point A, Photo 5218
View looking south east.

Pinyon/Juniper Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Utah Juniper (*Juniperus osteosperma*), Sandberg's bluegrass (*Poa secunda*) and Black sagebrush (*Artemisia nova*).

Minor vegetation components include Squirreltail (*Elymus elymoides*), Indian Ricegrass (*Stipa hymenoides*), Needle-and-thread grass (*Stipa comata*), Hopsage (*Grayia spinosa*) and Viscid rabbitbrush (*Chrysothamnus viscidiflorus*).



North Area- Transect N2- Point B, Photo 5219
View looking north west.

Other species noted within 3' each side of the transect include Utah Astragalus (*Astragalus utahensis*), Matt Eriogonum (*Eriogonum* species), Spindlestem (*Caulanthus crassicaulis*) and Singleleaf Pinyon (*Pinus monophylla*) seedlings.

Gold Hill Properties- Vegetation Survey



North Area- Transect N3- Point A, Photo 5226
View looking east.

Black Sagebrush Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation component is Black sagebrush
(*Artemisia nova*).

Minor vegetation components include Carpet phlox
(*Phlox hoodii*), Sandberg's bluegrass (*Poa secunda*),
Indian Ricegrass (*Stipa hymenoides*) and Viscid
rabbitbrush (*Chrysothamnus viscidiflorus*).



North Area- Transect N3- Point B, Photo 5227
View looking west.

Other species noted within 3' each side of the
transect include Green Ephedra (*Ephedra viridis*),
Antennaria species, *Liliaceae* species, *Erigeron* species
and *Opuntia* species.

Gold Hill Properties- Vegetation Survey



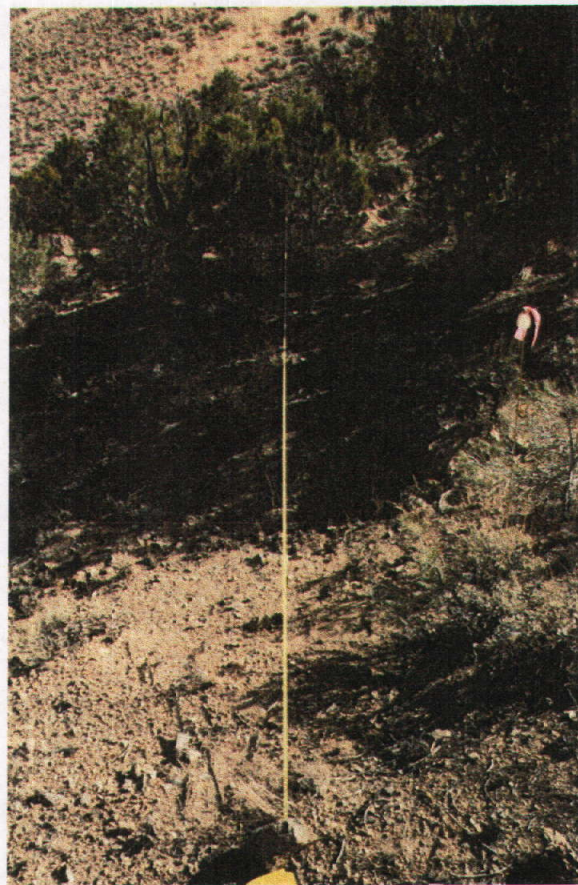
Rustler- Transect R1- Point A, Photo 5303
View looking south west.

Pinyon/Juniper Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Singleleaf Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus osteosperma*) and Black sagebrush (*Artemisia nova*).

Minor vegetation components include Sandberg's bluegrass (*Poa secunda*), Bluebunch wheatgrass (*Elymus spicatus*), Cheatgrass (*Bromus tectorum*) and *Arabis* (*Boechera*) species.



Rustler- Transect R1- Point B, Photo 5300
View looking north east.

Other species noted within 3' each side of the transect include *Stellaria species*, Green Ephedra (*Ephedra viridis*), Carpet phlox (*Phlox hoodii*), Beckwith's milkvetch (*Astragalus beckwithii*), Silvery aster (*Macheranthera canescens*) and, Indian Ricegrass (*Stipa hymenoides*).

Gold Hill Properties- Vegetation Survey



Rustler-Transect R2- Point A, Photo 5304
View looking west north west.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*), Hopsage (*Grayia spinosa*) and Cheatgrass (*Bromus tectorum*).

Minor vegetation components include Squirreltail (*Elymus elymoides*), Galleta (*Hilaria jamesii*), Indian Ricegrass (*Stipa hymenoides*), Unknown grass, *Chenopodiaceae* species, Green Ephedra (*Ephedra viridis*) and Viscid rabbitbrush (*Chrysothamnus viscidiflorus*).



Rustler-Transect R2- Point B, Photo 5305
View looking east south east.

Other species noted within 3' each side of the transect include Bluebunch wheatgrass (*Elymus spicatus*) and *Astragalus* species.

Gold Hill Properties- Vegetation Survey



Rustler- Transect R3- Point A, Photo 5308
View looking west.

Wyoming Big Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Black sagebrush (*Artemisia nova*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Squirreltail (*Elymus elymoides*), Indian Ricegrass (*Stipa hymenoides*), Bluebunch wheatgrass (*Elymus spicatus*), Unknown grass, Hopsage (*Grayia spinosa*), Spindlestem (*Caulanthus crassicaulis*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*) and Green Ephedra (*Ephedra viridis*).



Rustler- Transect R3- Point B, Photo 5309
View looking east.

Other species noted within 3' each side of the transect include Singleleaf Pinyon (*Pinus monophylla*), Beckwith's milkvetch (*Astragalus beckwithii*) and *Arabis* (*Boechera*) species.

Gold Hill Properties- Vegetation Survey



Yellow Hammer- Transect YH1- Point A, Photo 5157

View looking south west.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*), Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Sandberg's bluegrass (*Poa secunda*) and Squirreltail (*Elymus elymoides*).

Minor vegetation components include Shadscale (*Atriplex confertifolia*), Cheatgrass (*Bromus tectorum*) and an unidentifiable forb.



Yellow Hammer- Transect YH1- Point B, Photo 5158

View looking north east.

Other species noted within 3' each side of the transect include Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), *Opuntia* species, Carpet phlox (*Phlox hoodii*), *Arabis* (*Boechea*) species and Singleleaf Pinyon (*Pinus monophylla*) seedlings.

Gold Hill Properties- Vegetation Survey



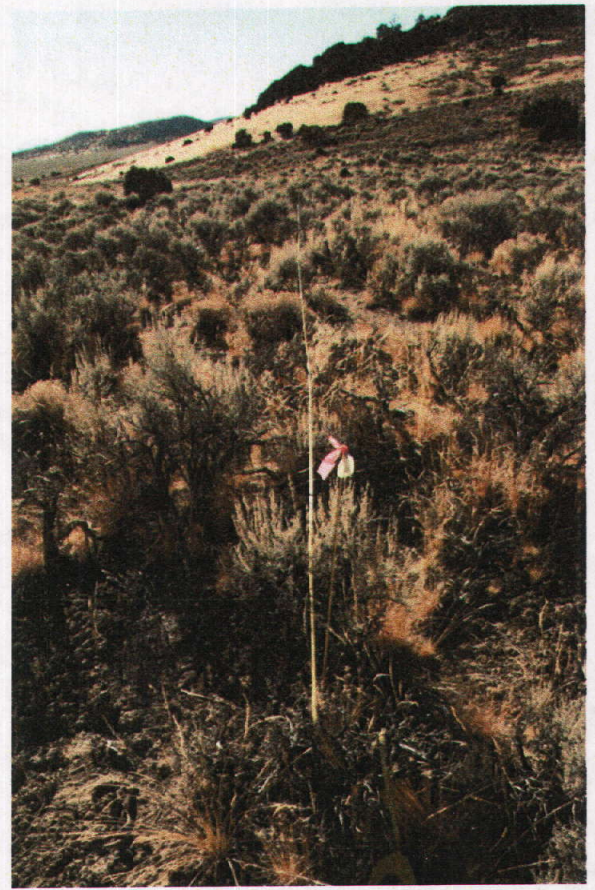
Yellow Hammer- Transect YH2- Point A, Photo 5164
View looking east.

Wyoming Sagebrush Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Wyoming
Big Sagebrush (*Artemisia tridentata* var.
wyomingensis), Sandberg's bluegrass (*Poa secunda*)
and Squirreltail (*Elymus elymoides*).

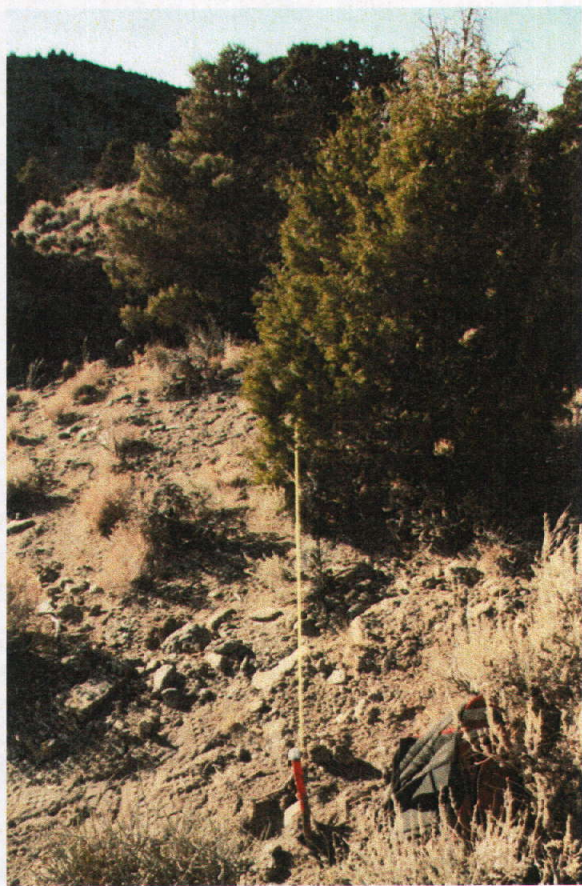
Minor vegetation components include Viscid
rabbitbrush (*Chrysothamnus viscidiflorus*), Singleleaf
Pinyon (*Pinus monophylla*) seedling, Indian Ricegrass
(*Stipa hymenoides*) and Needle-and-thread grass
(*Stipa comata*).



Yellow Hammer- Transect YH2- Point B, Photo 5165
View looking west.

Other species noted within 3' each side of the
transect include Cheatgrass (*Bromus tectorum*),
Beckwith's milkvetch (*Astragalus beckwithii*) and
Phlox species.

Gold Hill Properties- Vegetation Survey



Yellow Hammer- Transect YH3- Point A, Photo 5166
View looking north west.

Pinyon/Juniper Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Singleleaf Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus osteosperma*), Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*) and Black sagebrush (*Artemisia nova*).

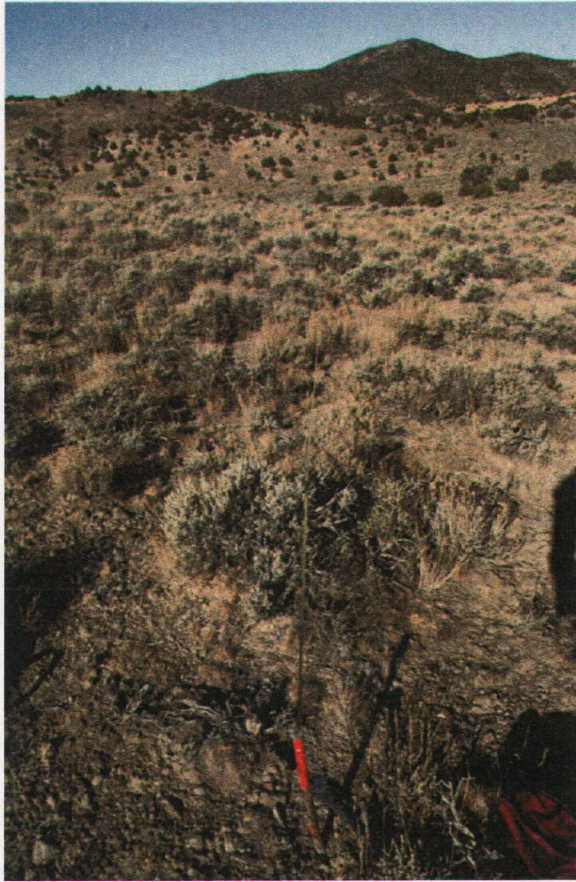
Minor vegetation components include Sandberg's bluegrass (*Poa secunda*), Squirreltail (*Elymus elymoides*), Cheatgrass (*Bromus tectorum*), Indian Ricegrass (*Stipa hymenoides*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*) and Hopsage (*Grayia spinosa*).



Yellow Hammer- Transect YH3- Point B, Photo 5167
View looking south east.

Other species noted within 3' each side of the transect include Green Ephedra (*Ephedra viridis*), Carpet phlox (*Phlox hoodii*) and Needle-and-thread grass (*Stipa comata*).

Gold Hill Properties- Vegetation Survey



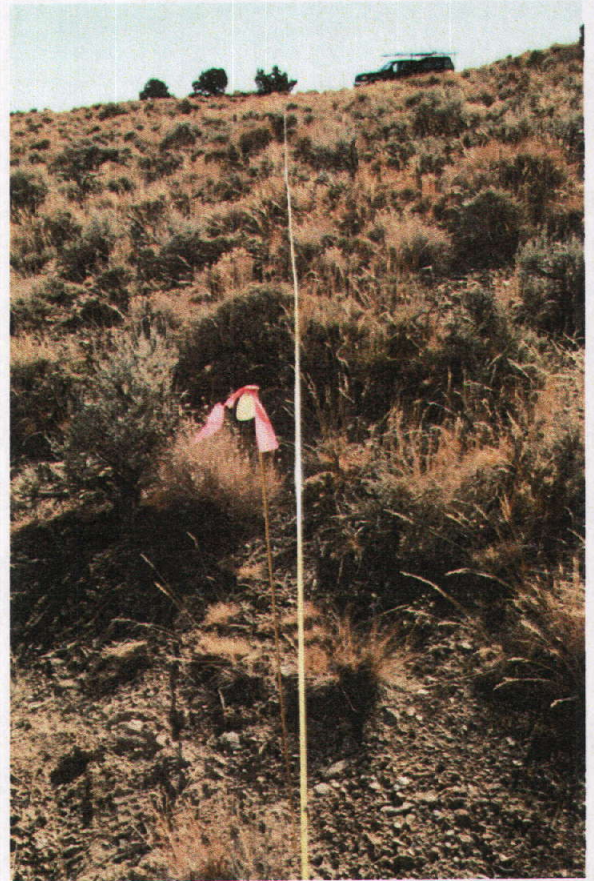
Yellow Hammer- Transect YH4- Point A, Photo 5202
View looking west.

Black Sagebrush Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*), Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Carpet phlox (*Phlox hoodii*), *Astragalus* species, Squirreltail (*Elymus elymoides*), unidentifiable forbs, Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Hopsage (*Grayia spinosa*) and Shadscale (*Atriplex confertifolia*).



Yellow Hammer- Transect YH4- Point B, Photo 5203
View looking east.

Other species noted within 3' each side of the transect include Spindlestem (*Caulanthus crassicaulis*), *Opuntia* species, Tumbling mustard (*Sisymbrium altissimum*), *Liliaceae* species, Utah *Astragalus* (*Astragalus utahensis*), *Erigeron* species and (*Phlox longifolia*)

Gold Hill Properties- Vegetation Survey



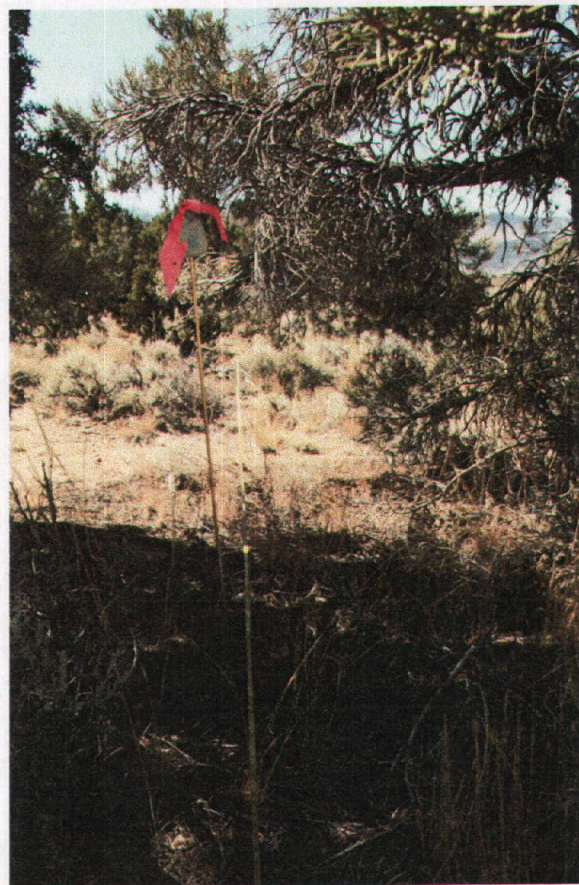
Yellow Hammer- Transect YH5- Point A, Photo 5207
View looking north east.

Pinyon/Juniper Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Singleleaf
Pinyon (*Pinus monophylla*) and Utah Juniper
(*Juniperus osteosperma*).

Minor vegetation components include Sandberg's
bluegrass (*Poa secunda*), and Squirreltail (*Elymus
elymoides*), Cheatgrass (*Bromus tectorum*), Indian
Ricegrass (*Stipa hymenoides*), *Astragalus* species,
Boraginaceae species, Longleaf Phlox (*Phlox
longifolia*), *Castilleja* species, Viscid rabbitbrush
(*Chrysothamnus viscidiflorus*), Green Ephedra
(*Ephedra viridis*), Wyoming Big Sagebrush (*Artemisia
tridentata* var. *wyomingensis*), Black sagebrush
(*Artemisia nova*) and Hopsage (*Grayia spinosa*).



Yellow Hammer- Transect YH5- Point B, Photo 5210
View looking south west.

Other species noted within 3' each side of the
transect include Spindlestem (*Caulanthus
crassicaulis*), Needle-and-thread grass (*Stipa comata*)
and *Liliaceae* species.

Gold Hill Properties- Vegetation Survey



Yellow Hammer- Transect YH6- Point A, Photo 5211
View looking west north west.

Wyoming Sagebrush Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Wyoming
Big Sagebrush (*Artemisia tridentata* var.
wyomingensis), Viscid rabbitbrush (*Chrysothamnus*
viscidiflorus), Hopsage (*Grayia spinosa*) and
Squirreltail (*Elymus elymoides*).

Minor vegetation components include Sandberg's
bluegrass (*Poa secunda*), Cheatgrass (*Bromus*
tectorum), Indian Ricegrass (*Stipa hymenoides*),
Carpet phlox (*Phlox hoodii*), Longleaf Phlox (*Phlox*
longifolia) and *Opuntia* species.



Yellow Hammer- Transect YH6- Point B, Photo 5212
View looking east south east.

Other species noted within 3' each side of the
transect include *Astragalus* species, *Arabis* (*Boechera*)
species, *Liliaceae* species, *Delphinium* species, Needle-
and-thread grass (*Stipa comata*) and Great Basin
Wildrye (*Elymus cinereus*).

Gold Hill Properties- Vegetation Survey



Yellow Hammer- Transect YH7- Point A, Photo 5213
View looking north.

Pinyon/Juniper Community

Soil type 48- Reywat-Broad-Rock outcrop association,
30 to 60 percent slopes.

Principal vegetation components include Singleleaf Pinyon (*Pinus monophylla*), Utah Juniper (*Juniperus osteosperma*) and Sandberg's bluegrass (*Poa secunda*).

Minor vegetation components include Squirreltail (*Elymus elymoides*), Cheatgrass (*Bromus tectorum*), Indian Ricegrass (*Stipa hymenoides*), *Opuntia* species, Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*) and Viscid rabbitbrush (*Chrysothamnus viscidiflorus*).



Yellow Hammer- Transect YH7- Point B, Photo 5214
View looking south.

Other species noted within 3' each side of the transect include Needle-and-thread grass (*Stipa comata*), Carpet phlox (*Phlox hoodii*), Shadscale (*Atriplex confertifolia*), Nuttall's horsebrush (*Tetradymia nutallii*) and *Antennaria* species.

Gold Hill Properties- Vegetation Survey



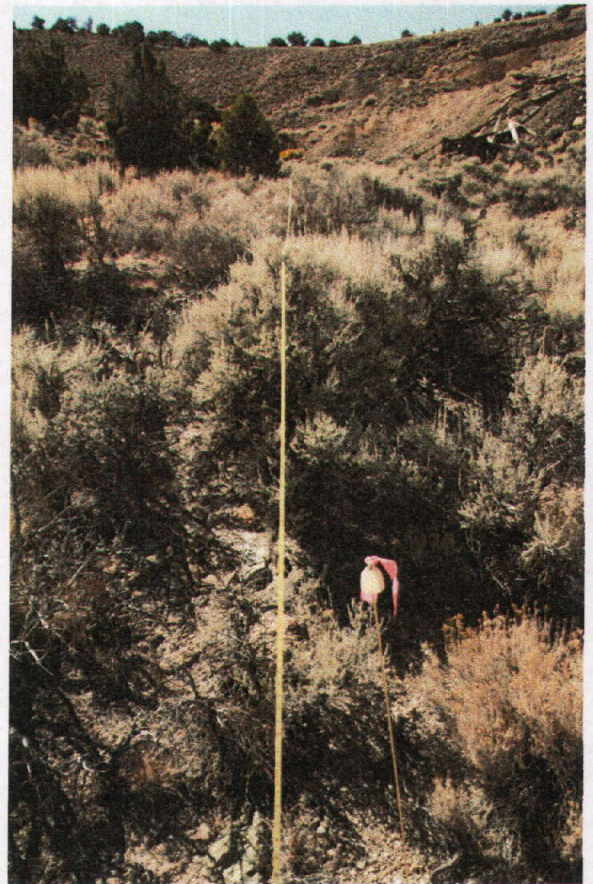
Frankie- Transect F3- Point A, Photo 5361
View looking east north east.

Wyoming Big Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Hopsage (*Grayia spinosa*) and Squirreltail (*Elymus elymoides*).

Minor vegetation components include Sandberg's bluegrass (*Poa secunda*), Bluebunch wheatgrass (*Elymus spicatus*), Cheatgrass (*Bromus tectorum*), Carpet phlox (*Phlox hoodii*), unknown forb, Black sagebrush (*Artemisia nova*) and Singleleaf Pinyon (*Pinus monophylla*).



Frankie- Transect F3- Point B, Photo 5362
View looking west south west.

Other species noted within 3' each side of the transect include Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Shadscale (*Atriplex confertifolia*), *Arabis* (*Boechera*) species, *Erigeron* species, Indian Ricegrass (*Stipa hymenoides*) and Gray Molly (*Bassia americana*).

Gold Hill Properties- Vegetation Survey



Frankie- Transect F1- Point A, Photo 5352
View looking west south west.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation components include Black sagebrush (*Artemisia nova*) and Indian Ricegrass (*Stipa hymenoides*).

Minor vegetation components include Squirreltail (*Elymus elymoides*), Bluebunch wheatgrass (*Elymus spicatus*), Needle-and-thread grass (*Stipa comata*), Galleta (*Hilaria jamesii*), unknown grass, *Atriplex* species, Gray Molly (*Bassia americana*) and Shadscale (*Atriplex confertifolia*).



Frankie- Transect F1- Point B, Photo 5353
View looking east north east.

Other species noted within 3' each side of the transect include Green Ephedra (*Ephedra viridis*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Nuttall's horsebrush (*Tetradymia nuttallii*), Shadscale (*Atriplex confertifolia*), Cheatgrass (*Bromus tectorum*) and Musk thistle (*Carduus nutans*).

Gold Hill Properties- Vegetation Survey



Frankie-Transect F2- Point A, Photo 5356
View looking north.

Black Sagebrush Community

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Principal vegetation is Black Sagebrush (*Artemisia nova*).

Minor vegetation components include Sandberg's bluegrass (*Poa secunda*), unknown grass, Cheatgrass (*Bromus tectorum*), Hopsage (*Grayia spinosa*), Shadscale (*Atriplex confertifolia*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*) and Singleleaf Pinyon (*Pinus monophylla*) seedling.



Frankie-Transect F2- - Point B, Photo 5357
View looking south.

Other species noted within 3' each side of the transect include *Castilleja* species, *Chenopodiaceae* species, Matt Eriogonum (*Eriogonum* species), Longleaf Phlox (*Phlox longifolia*), Nuttall's horsebrush (*Tetradymia nuttallii*) and Indian Ricegrass (*Stipa hymenoides*).

Gold Hill Properties- Vegetation Survey

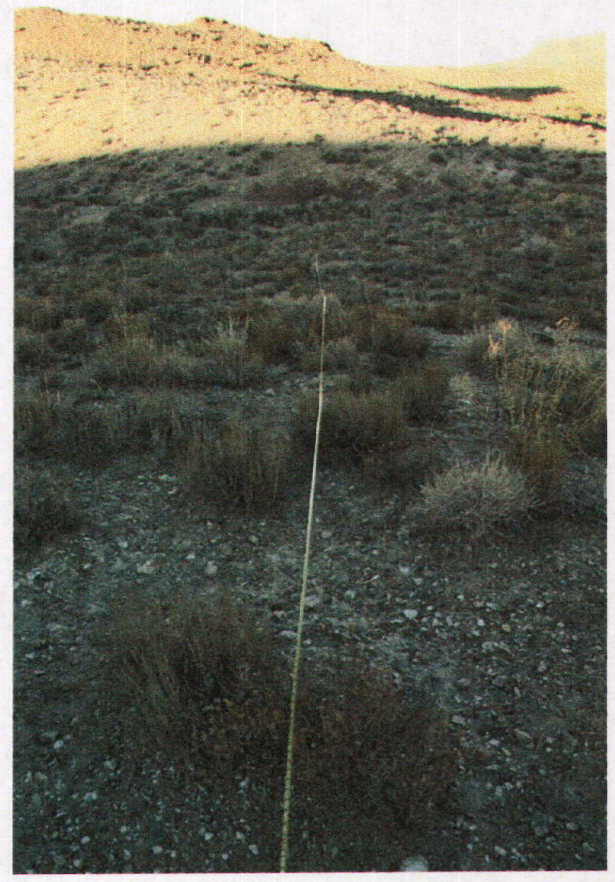


Cactus Mill Transect CM2- Point A, Photo 5108
View looking south west.

Soil type 4- Amtoft- Rock outcrop complex, 30% to 70% slopes.

Common vegetation components include Black sagebrush (*Artemisia nova*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), and Littleleaf horsebrush (*Tetradymia glabrata*).

Minor vegetation components include Shadscale (*Atriplex confertifolia*), Indian Ricegrass (*Stipa hymenoides*), Sandberg's bluegrass (*Poa secunda*), and Needle-and-thread grass (*Stipa comata*).



Cactus Mill Transect CM2- Point B, Photo 5109
View looking north east.

Other species present within 3' each way of the transect include Prince's plume (*Stanleya pinnata*), Tumbling mustard (*Sisymbrium altissimum*), African mustard (*Malcolmia africana*), and Carpet phlox (*Phlox hoodii*).

Gold Hill Properties- Vegetation Survey



Cactus Mill Transect CM3- Point A, Photo 5110
View looking east.

Soil type 4- Amtoft- Rock outcrop complex, 30% to 70% slopes.

Common vegetation components include Wyoming Big Sagebrush (*Artemisia tridentata* var. *wyomingensis*), Greasewood (*Sarcobatus vermiculatus*), Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), and Halogeton (*Halogeton glomerata*).

Minor vegetation components include Green Ephedra (*Ephedra viridis*) and Shadscale (*Atriplex confertifolia*).



Cactus Mill Transect CM3- Point B, Photo 5111
View looking west.

Other species present within 3' each side of the transect include Littleleaf horsebrush (*Tetradymia glabrata*), Tumbling mustard (*Sisymbrium altissimum*), Galleta (*Hilaria jamesii*), Nuttall's horsebrush (*Tetradymia nutallii*), Carpet phlox (*Phlox hoodii*), Gray Molly (*Bassia americana*) and Bluebunch wheatgrass (*Elymus spicatus*).

Gold Hill Properties- Vegetation Survey



Cactus Mill Transect CM4- Point A, Photo 5113
View looking east north east.

Soil Type 11: Checkett- Very cobbly loam, 10% to 40% slopes.

Common vegetation components include Greasewood (*Sarcobatus vermiculatus*), Green Ephedra (*Ephedra viridis*), Galleta grass (*Hilaria jamesii*), Indian Ricegrass (*Stipa hymenoides*), and Halogeton (*Halogeton glomeratus*).

Minor vegetation components include Big Sagebrush (*Artemisia tridentata* var. *tridentata*), Shadscale (*Atriplex confertifolia*) and Crenulate Phacelia (*Phacelia crenulata*).



Cactus Mill Transect CM4- Point B, Photo 5114
View looking west south west.

Other species present within 3' each side of the transect include Tumbling Mustard (*Sisymbrium altissimum*), and Cheatgrass (*Bromus tectorum*).

Gold Hill Properties- Vegetation Survey

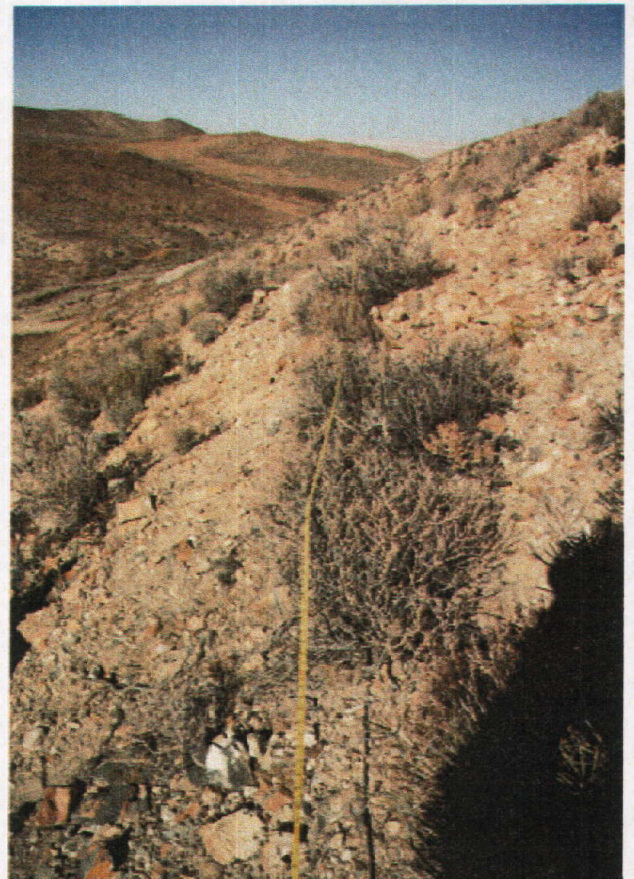


Cactus Mill Transect CM1- Point A, Photo 5106
View looking south west.

Soil type 4- Amtoft-Rock outcrop complex, 30% to 70% slopes.

Common vegetation components include Nuttall's horsebrush (*Tetradymia nutallii*) and Black sagebrush (*Artemisia nova*).

Minor vegetation components include Viscid rabbitbrush (*Chrysothamnus viscidiflorus*), Shadscale (*Atriplex confertifolia*), Sandberg's bluegrass (*Poa secunda*), Squirreltail (*Elymus elymoides*), Carpet phlox (*Phlox hoodii*).



Cactus Mill Transect CM1- Point B, Photo 5107
View looking north east.

Other species present within 3' of the transects are Green Ephedra (*Ephedra viridis*), Indian Ricegrass (*Stipa hymenoides*), Prince's plume (*Stanleya pinnata*), Matt Eriogonum (*Eriogonum* species) and Broom snakeweed (*Gutierrezia sarothrae*).